Expanded Site Inspection
Final Report

for

Roadway Trucking Terminal
ILD 980 677 843

February 3, 1994

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1.0 Introduction

On May 21, 1992, B&V Waste Science and Technology Corp. (BVWST) was authorized, by approval of the work plan by the U.S. Environmental Protection Agency (USEPA) Region V, to conduct an expanded site inspection (ESI) of the Roadway Trucking Terminal (Roadway) site, in Chicago Heights, Cook County, Illinois.

The site was initially placed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on October 1, 1979, as a result of a request for discovery action initiated by the USEPA.

Roadway received its initial Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluation in the form of a preliminary assessment (PA) report completed by the Illinois Environmental Protection Agency (IEPA) on December 18, 1987. Three monitoring wells were installed during the week of May 10, 1993. The sampling portion of the ESI was conducted May 17 and 18, 1993, when a field team collected three soil samples, four sediment samples, and three groundwater samples from the three new monitoring wells.

The purposes of the ESI have been stated by the USEPA in a directive outlining site inspections performed under CERCLA. The directive states:

> The objective of the expanded site inspection (SI) is to provide documentation for the Hazard Ranking System (HRS) package to support National Priority List (NPL) rulemaking. Remaining HRS information requirements are addressed and site hypotheses not completely supported during previous investigations are evaluated. Expanded SI sampling is designed to satisfy HRS data requirements by documenting observed releases, observed contamination, and levels of actual contamination at targets. In addition, investigators collect remaining non-sampling information. Sampling during the expanded SI includes background and quality assurance/quality control samples to fully document releases and attribute them to the site. Following the expanded SI, USEPA site assessment managers assign the site a priority for HRS package preparation and proposal to the NPL.

USEPA Region V requested that BVWST identify sites during the ESI that may require removal action to remediate an immediate human or environmental threat.

2.0 Site Background

2.1 Introduction

This section includes information obtained from the ESI and previous site activity reports.

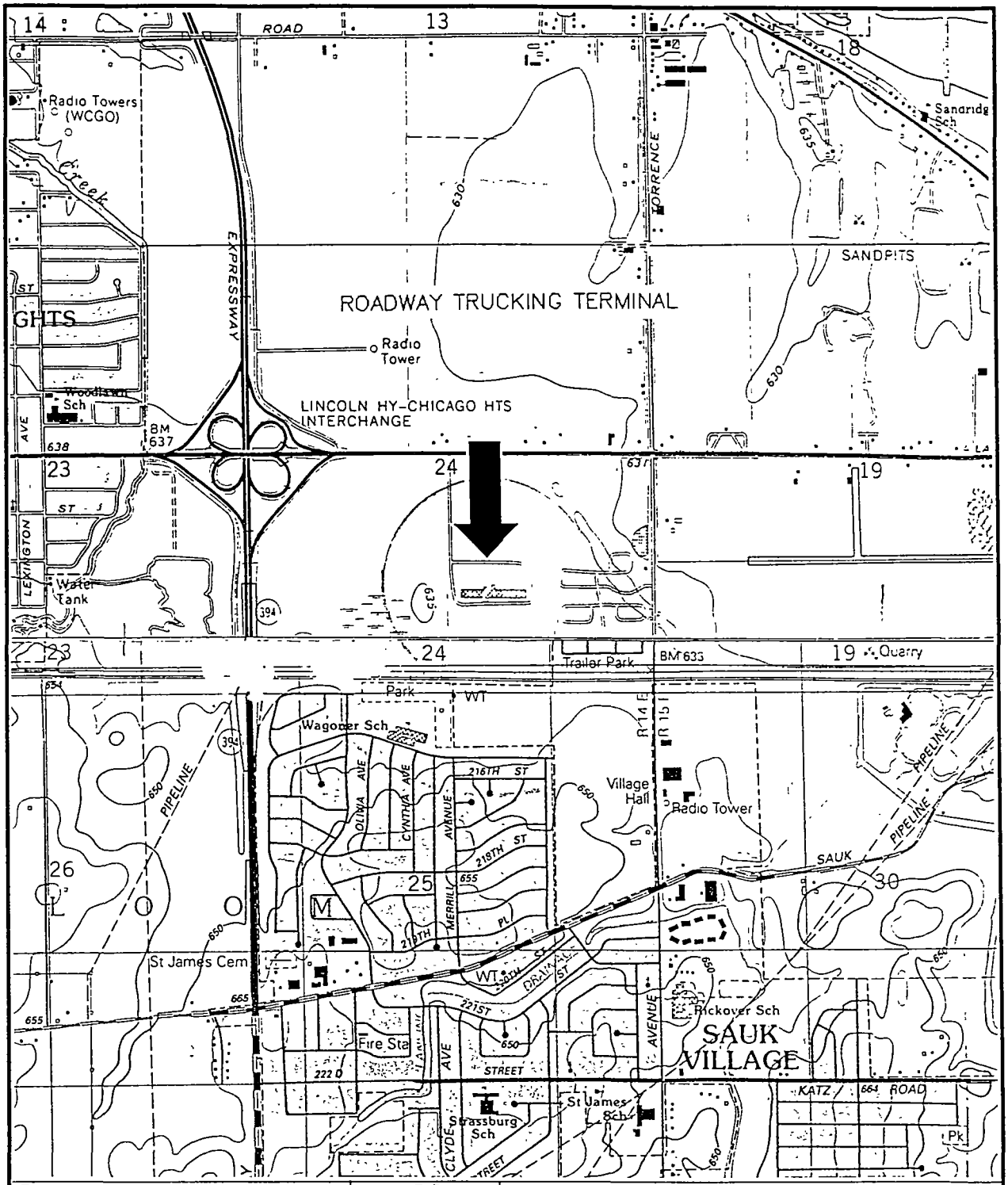
2.2 Site Description

Roadway is a transport facility located in a rural setting at 2000 Lincoln Highway, Chicago Heights, Cook County, Illinois, in Township 35N, Range 14E, Section 24. Although Roadway's business address is Chicago Heights, the site is located in Sauk Village. Figure 2-1 is the site location map. Figure 2-2 presents a sketch of the site layout. Appendix A presents the 15-mile surface water route map.

Roadway is an active facility, covering 75 acres. It is fenced and set back south of Lincoln Highway and east of Highway 394. The majority of the site is paved. An access road runs along the perimeter of the northern and western site borders. The facility is accessed from Lincoln Highway.

The Roadway site is comprised of two truck terminals, several truck bays, and two maintenance buildings. The northern truck terminal contains the terminal office. Approximately five 20,000-gallon underground storage tanks (USTs) that were once used to store diesel fuel are located at the southwestern corner of the site. Gasoline, motor oil, and anti-freeze are stored in the USTs. Waste oil is stored in a 2,000-gallon UST. The waste oil UST is located beneath a concrete pad south of monitoring well #3 in the southwestern corner of the site. Waste anti-freeze is stored in a plastic 200-gallon above ground storage tank (AST). The waste anti-freeze AST is in the maintenance garage. Roadway has contracted with Safety Kleen Corporation of Elgin, Illinois, to pick up waste oil and anti-freeze on an "on-demand" basis.

Drainage ditches that border the western and southern edges of the pavement contain site runoff. Grass surrounds these drainage ditches. Two additional east-west trending drainage ditches are located north of the trucking terminals. The drainage ditches were designed to direct surface runoff to the west. The surface runoff collects into three sumps located along the western site border. Oil/water separators, operating within the sumps, segregate the floating hydrocarbon fraction from the water. The water is discharged to the drainage culvert that drains north to the wetland. The hydrocarbon fraction is stored onsite and periodically shipped



Source:
USGS Topographic Maps
Calumet City, 1991 and Dyer, 1990 Quadrangles

Scale:
1:24,000

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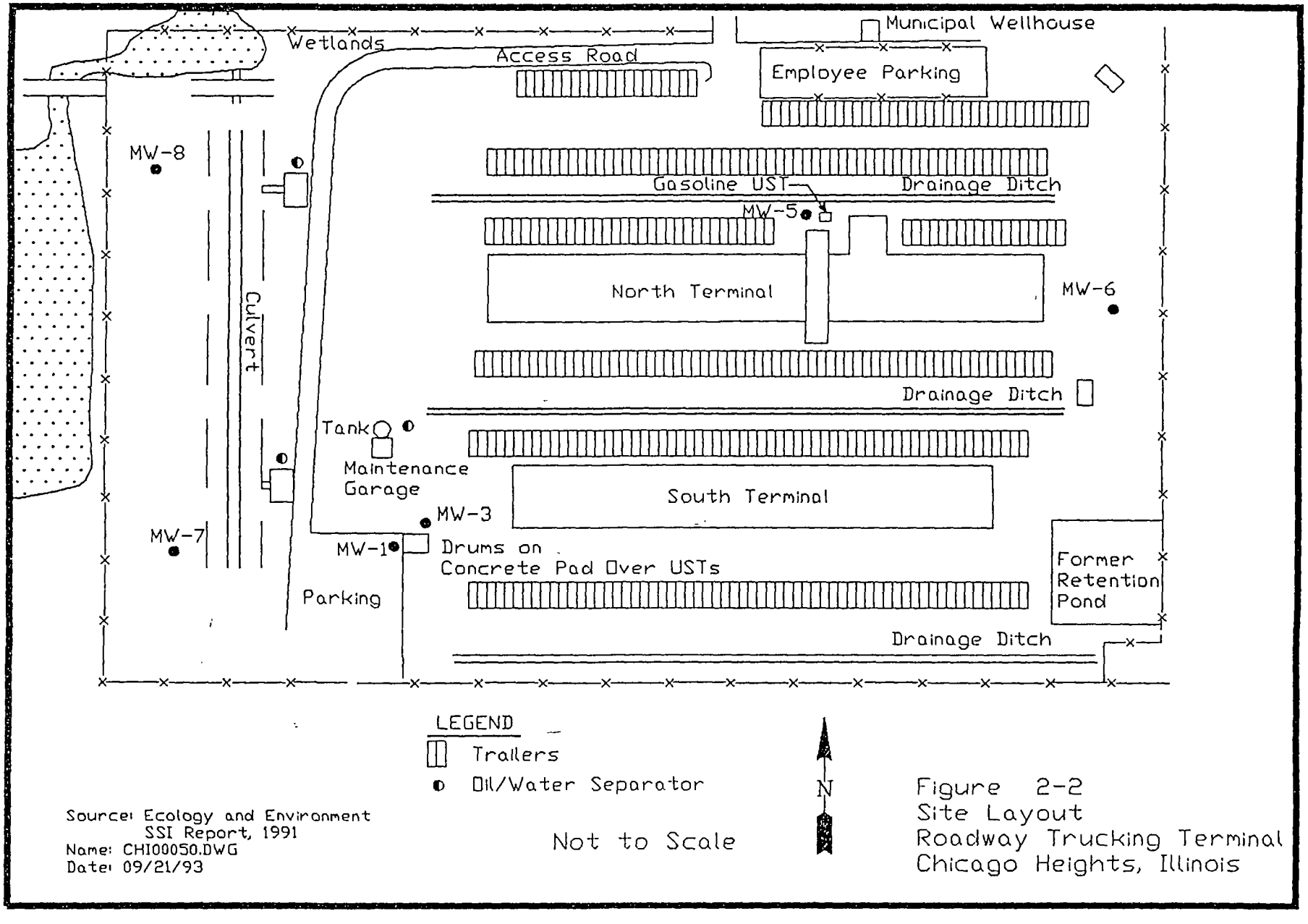
Figure 2–1
Site Location Map

Roadway Trucking Terminal
Chicago Heights, Illinois

B&V Waste Science and Technology Corp.



Source: Ecology and Environment
SSI Report, 1991
Name: CHI00050.DWG
Date: 09/21/93

Figure 2-2
Site Layout
Roadway Trucking Terminal
Chicago Heights, Illinois

offsite for disposal. The oil is collected in tanks; the water is discharged to drainage culverts that lead north to the wetland.

During the initial site visit, site representatives identified three existing monitoring wells (MW-1, MW-3, and MW-5). According to Roadway representatives, monitoring wells MW-2 and MW-4 were destroyed during terminal expansion. Historically, the monitoring wells have not readily produced groundwater. The 2-year, 24-hour rainfall is approximately three inches. The site is situated outside the 500-year floodplain. The watershed is estimated to be approximately 200 acres. Hydraulic conductivity of the surficial soils is estimated to be 1×10^{-6} centimeters per second. Roadway is designated as a RCRA small quantity generator.

Roadway is surrounded by assumed (but not observed) active farmland and a mobile home park to the northeast, a mobile home park to the east, a ConRail railroad right-of-way and residences to the south, a managed wetland and Highway 394 to the west, and the Carolina Trucking Company (CTC) to the northwest. CTC owns and manages the wetland located west of Roadway. Land use within four miles of the site is residential, commercial, and light industrial developments.

2.3 Site History

2.3.1 Operational History

Roadway is a national trucking firm that receives, stores, and dispenses a variety of packaged cargo, including paints and solvents. Roadway does not transport type A and B explosives, hazardous wastes, or bulk liquids. Roadway Services Inc. of Akron, Ohio, is the holding company of the site. Roadway has been at the present location since 1970. Property ownership before 1970 is unknown. The Roadway facility operates 24 hours a day and employs approximately 1,500 persons.

2.3.2 Summary of Onsite Environmental Activity

Several spills have occurred at Roadway. According to Roadway site health and safety officer, Jim Fagan, the spills, generally small, were usually caused by forklifts puncturing drums or dropping containers. Roadway has contracted with Safety Kleen Corporation for emergency spill containments on an "on-call" basis. Appendix B presents a non-inclusive list, supplied by Jim Fagan, of spills that have occurred at Roadway in 1992.

In June 1980, the USEPA Hazardous Materials Enforcement and Response Program (HMERP) responded to a spill of two containers of Terra-O-Cide (an

insecticide/fumigant) spilled in a trailer. A strong odor was noted in the trailer. No evidence of a spill to the pavement was observed; however, spilled diesel fuel was noted.

To expand the terminal, a former retention pond located at the southeastern corner of the site was filled with dirt and covered with asphalt in Summer 1989. Filling the pond was not a state-mandated action.

In June 1989, 50 cubic yards of soil were removed from the site during remediation of a ruptured oil UST. The treatment and disposal method and the contractor who performed the work are unknown.

On November 27, 1989, the Sauk Village Code Enforcement Officer (SVCEO) noted a black, slimy foreign substance in the western drainage culvert. This substance was not noted during a SVCEO site inspection performed five days earlier.

On November 28, 1989, the IEPA, Illinois State Police, Sauk Village Director of Public Works, Sauk Village Assistant Fire Chief, and Roadway representatives conducted an inspection of the drainage culvert. The IEPA recommended Roadway replace saturated oil booms located at the discharge drains.

The IEPA completed a PA for the Roadway site on December 10, 1989. The PA recommended a medium priority for further inspection of the site.

In January 1990, the Sauk Village Code Enforcement Officer again noted the oil booms required replacement. In May 1990, Roadway submitted water and soil sample results to Sauk Village officials as required following their investigation. The samples were collected from the northern end of the drainage culvert and analyzed for generic fats, oils, and grease. Roadway proposed to excavate the bottom of the drainage culvert, which was suspected to be contaminated. Excavation work was conducted in Fall 1990; however, according to Grant Wilk (Roadway environmental geologist), no soil was removed from the site, but improvements to the oil/water separators were implemented. The installation date of the oil/water separators is unknown.

On June 12, 1990, the USEPA field investigation team (FIT) was tasked to collect four soil, three sediment, and two monitoring well samples. The samples were analyzed for organic and inorganic substances contained on the USEPA Target Analyte List (TAL) and Target Compound List (TCL), including volatile and semi-volatile organic compounds, pesticides/PCBs, metals, and cyanide. Analysis of soil samples revealed the presence of semi-volatile organic compounds and metals.

Monitoring well analysis revealed the presence of volatile and semi-volatile organic compounds and metals.

2.4 Applicability of Other Statutes

After the PA, the IEPA assigned Roadway a medium priority. Based on this recommendation, Ecology and Environment (E&E) conducted a screening site inspection (SSI) of the site. The SSI report, dated May 21, 1991, assigned the site a high priority for further investigation (E&E, 1991). Roadway Trucking Terminal was listed in the RCRA and CERCLIS notifiers.

3.0 Site Inspection Activities and Analytical Results

3.1 Introduction

This section outlines procedures used and observations made during the ESI conducted at the Roadway site. Sampling activities were conducted in accordance with the 1991 USEPA approved Quality Assurance Project Plan (QAPjP). Figure 3-1 is a sample location map; Table 3-1 summarizes sample descriptions and locations.

ESI samples were analyzed by USEPA Contract Laboratory Program (CLP) participant laboratories for organic and inorganic substances contained on the USEPA TCL and TAL. Appendix C presents the TCL and TAL. Appendix D presents analytical results of data generated by ESI sampling. Appendix E presents annotated photographs of the site and sample locations.

3.2 Site Reconnaissance

On August 12, 1992, a reconnaissance of the Roadway site was conducted. This visit included a visual inspection to determine the site's status, terminal activities, health or safety hazards, and potential sampling locations.

A tour of Roadway was conducted. Areas of past spills, existing well locations, and the site layout were noted. Location and operation of the oil/water separators were observed and discussed. Area hospital and emergency contacts were obtained.

3.3 Site Representative Interview

The site reconnaissance included an interview with the following Roadway representatives: Guy T. Foley, district maintenance manager; Grant B. Wilk, regional environmental geologist; and Jim Fagan, site health and safety officer. The site history and environmental activities were discussed. Roadway representatives conducted the site tour.

3.4 Monitoring Well Installation

Three monitoring wells were installed at Roadway during ESI field activities. Figure 3-1 shows the monitoring well locations. Soil boring advancement and monitoring well installation were performed with a two-man, A-300 Plains States drill rig operated by Layne Environmental Services. Drilling began May 10, 1993, by advancing a soil boring at each well location with 4.25-inch ID hollow stem augers.

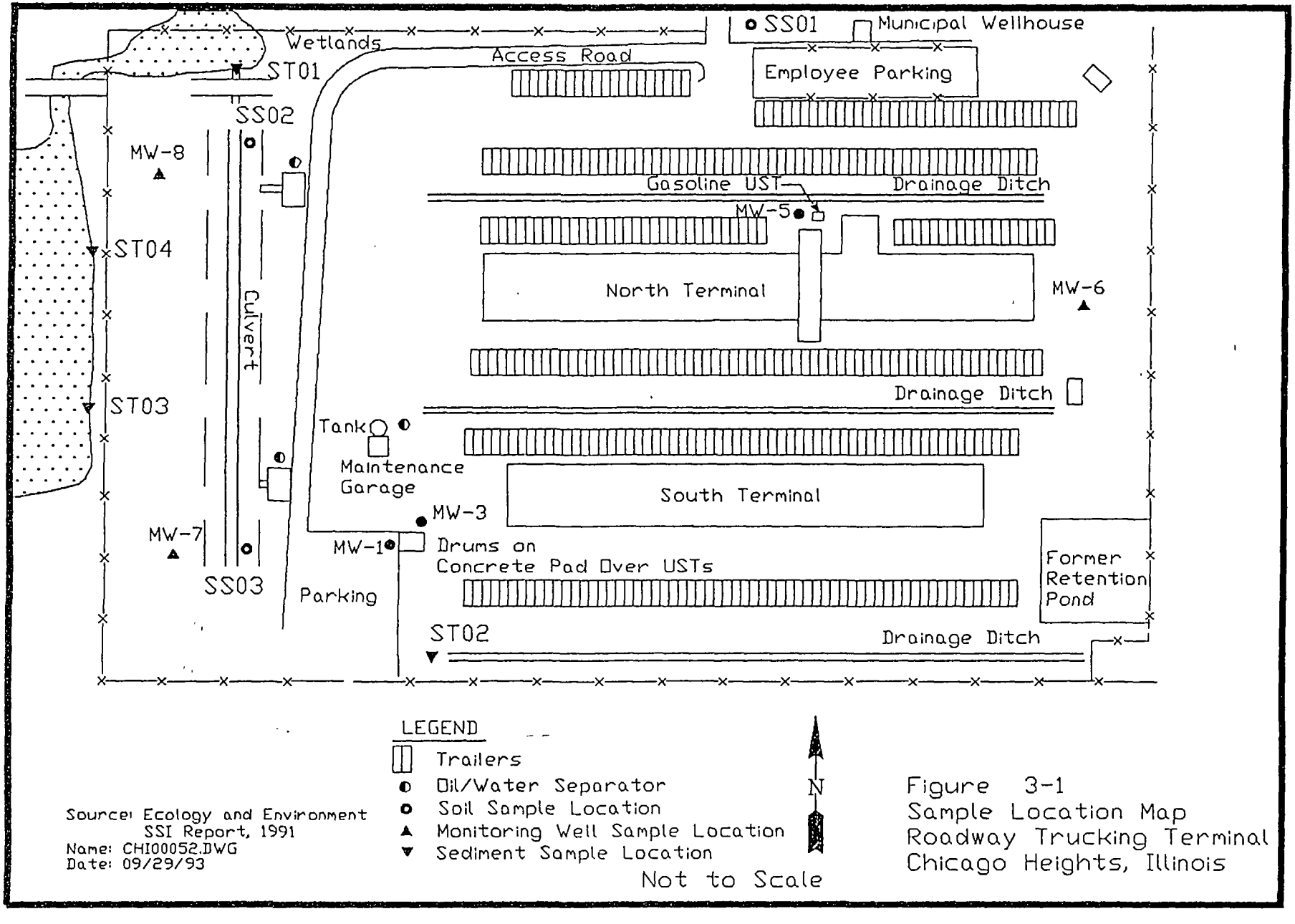


Figure 3-1
Sample Location Map
Roadway Trucking Terminal
Chicago Heights, Illinois

Table 3-1
Sample Summary

Sample	Sample Location	Sample Description
MW06	Monitoring well MW-6 located at eastern border of site pavement.	Water sample was clear, pH 7.46, temperature 14 degrees F., conductivity 3.62 umbo.
MW07	Monitoring well MW-7 located near southern end of culvert along western site border.	Water sample was clear, pH 6.48, temperature 10 degrees F., conductivity 4.51 umbo.
MW08	Monitoring well MW-8 at near northern end of culvert along western border. Background.	Water sample was clear, pH 7.45, temperature 12 degrees F., conductivity 2.75 umbo.
ST01	Collected at northern end of culvert along the site western border. Sample was collected on northern side of conduit pipe, next to pipe.	Sediment sample was moist, black, sandy silt with organic material. A noticeable organic odor was observed.
ST02	Collected at western end of drainage ditch along southern side of site. Background.	Sediment sample was dry, gray clay consisting of small rocks.
ST03	Collected along eastern edge of wetland, adjacent to Roadway's western border, directly west of fourth utility pole along site border.	Sediment sample was moist, brown, silty sandy clay with a tan to orange color at the upper layer.
ST04	Collected along eastern edge of wetland, next to site border, directly west of second utility pole from the north.	Sediment sample was moist, dark brown, clay and silt with some sand and gravel.
SS01	Collected from southwestern corner of farmland situated northeast of site. Background.	Soil sample was dry, gray clay.
SS02	Collected from northern end of western drainage ditch.	Soil sample was moist, black clay.
SS03	Collected from southern end of western drainage ditch.	Soil sample was dry, brown clay with fibrous material.

Split spoon soil samples were collected from each boring beginning at 0 to 2 feet below ground surface and every 5 feet thereafter until the end of the boring. A geologist classified and logged the soil. Appendix F contains the boring logs and well installation logs.

Each boring was advanced approximately five to seven feet below the water table of the surficial aquifer. A monitoring well was installed in each boring using a 10 foot, 2-inch ID NSF certified schedule 40 PVC screen with 0.010-inch slots. The screen of each monitoring well was placed at a depth to intercept the water table. Two inch ID NSF certified schedule 40 PVC riser was installed to approximately three feet above ground surface. The annulus between the PVC well screen and riser was filled with a sand filter pack, a bentonite pellet seal, and cement-bentonite grout. A locking steel protective cover and guard posts were cemented into place. Each well was developed by surging and bailing a minimum of five volumes of water.

The drill crew installed MW-6 adjacent to the eastern edge of the pavement. Groundwater was encountered at 19 feet below ground surface. The boring was advanced to 25 feet below ground surface and a final split spoon sample was collected from 25 to 27 feet below ground surface. The monitoring well screen was placed from 14.5 to 24.5 feet below ground surface.

Two monitoring wells, MW-7 and MW-8, were located west of the facility. MW-7 was installed between the north-south trending drainage ditch and the wetland near the southwestern corner of the site pavement. MW-8 was installed between the north-south trending drainage ditch and the wetland near the northwestern corner of the site pavement. MW-8 is installed at a location thought to represent background conditions for the terminal area groundwater. Groundwater was encountered at MW-7 at 10.5 feet below ground surface. The boring was advanced to 20 feet below ground surface and a final split spoon sample was collected from 20 to 22 feet below ground surface. The monitoring well screen was placed in MW-7 from 11.5 to 21.5 feet below ground surface. Groundwater was encountered at MW-8 at 13.5 feet below ground surface. The boring was advanced to 20 feet below ground surface. The monitoring well screen was placed in MW-8 from 9.5 to 19.5 feet below ground surface.

The relative elevations of the monitoring wells were surveyed on July 8, 1993. A notch to mark the measured elevation point was placed on the top of the riser of each monitoring well. An elevation of 400.00 feet was assumed for the top of the

riser of monitoring well MW-8. The relative elevation of MW-6 was 402.37 feet; the relative elevation of MW-7 was 402.63 feet.

The groundwater flow direction of the glacial drift aquifer was determined using the relative elevations of the three wells. The flow direction is southeasterly; therefore, MW-8 is the upgradient background well.

Slug test data were collected on July 8, 1993, from the monitoring wells using an In-Situ Hermit SE1000B datalogger. The data were used to calculate the hydraulic conductivity of the aquifer. The data were entered into AQTESOLV, a software package designed by Geraghty and Miller, Inc., to determine the aquifer hydraulic conductivity. AQTESOLV is capable of calculating the hydraulic conductivity of unconfined, unconsolidated aquifers using the method defined by Bouwer and Rice (1976). The average hydraulic conductivity of MW-6 was 9.26 x 10^{-5} centimeters per second. The average hydraulic conductivity of MW-7 was 3.8 x 10^{-3} centimeters per second. The average hydraulic conductivity of MW-8 was 3.2 x 10^{-3} centimeters per second.

3.5 Groundwater Sampling

On May 18, 1993, a field sampling team collected groundwater samples from the three monitoring wells (MW-6, MW-7, and MW-8) installed during the ESI. Each sample was collected with a dedicated stainless steel bailer. Each bailer was decontaminated before well sampling. Roadway representatives did not elect to split samples collected by the field team. Figure 3-1 presents samples locations; Table 3-1 summarizes sample locations and descriptions.

Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories in accordance with the QAPjP.

All reusable sampling and personal protective equipment (PPE) were decontaminated before transport offsite. Disposable sampling and PPE items were decontaminated and discarded in accordance with the ESI work plan and QAPjP.

Monitoring well samples scheduled for organic analyses were shipped to Western Research Institute in Laramie, New York, on May 18, 1993. Monitoring well samples scheduled for inorganic analyses were shipped to American Analytical Testing Services in Broken Arrow, Oklahoma, on May 18, 1993. Samples were analyzed for TCL and TAL substances under a routine analytical request.

3.6 Sediment Sampling

On May 17, 1993, four sediment samples were collected. Each was excavated with a clean, dedicated stainless steel spoon and placed in a clean sample jar. Roadway representatives elected not to split samples. Figure 3-1 presents sample locations; Table 3-1 summarizes sample locations and descriptions.

Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories in accordance with the QAPjP.

All reusable sampling and PPE were decontaminated before transport offsite. Disposable sampling and PPE items were decontaminated and discarded in accordance with the ESI work plan and the QAPjP.

Sediment samples scheduled for organic analyses were sent to American Analytical Technical Services in Broken Arrow, Oklahoma, on May 17, 1993. Sediment samples scheduled for inorganic analyses were sent to Associated Laboratory Inc., in Orange, California, on May 17, 1993. Samples were analyzed for TCL and TAL substances under a routine analytical request.

Sediment sample ST01 was collected at the northern end of the western drainage ditch. ST02, which was designated as background, was collected from the western end of the drainage ditch located south of the site. ST03 and ST04 were collected from the eastern edge of the wetlands located on CTC property. Sample locations ST03 and ST04 were landmarked using utility poles that trend north-to-south between the wetland and Roadway property. ST03 was collected directly west of the second utility pole from the north; ST04 was collected directly west of the fourth utility pole from the north. Sediment sample locations were chosen to determine offsite migration of potential contaminants to the surface water pathway.

3.7 Soil Sampling

On May 17, 1993, three soil samples were collected. Each sample was collected with a clean, dedicated stainless steel spoon and placed in a clean sample jar. Roadway representatives elected not to split samples. Figure 3-1 presents sample locations. Table 3-1 summarizes sample locations and descriptions.

Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories in accordance with the QAPjP.

All reusable sampling and PPE were decontaminated before transport offsite. Disposable sampling and PPE items were decontaminated and discarded in accordance with the ESI work plan and the QAPjP.

Soil samples scheduled for organic analyses were sent to Western Research Institute in Laramie, Wyoming, on May 17, 1993. Soil samples scheduled for inorganic analyses were sent to American Analytical Technical Services in Broken Arrow, Oklahoma, on May 17, 1993. Samples were analyzed for TCL and TAL substances under a routine analytical request.

Soil samples SS02 and SS03 were collected from the northern and southern ends, respectively, of the western drainage culvert. The background soil sample, SS01, was collected from the southwestern corner of the farmland located northeast of the site. The background location was assumed to be representative of site soil characteristics. Soil locations were chosen to determine potential soil contamination from groundwater and surface water migration.

3.8 Analytical Results

This section summarizes analytical results from ESI samples. Appendix D presents the ESI analytical data. The following inorganic analytes were detected in monitoring well MW-7 in elevated concentrations above background: cobalt (117 µg/L), iron (35,400 µg/L), manganese (9,440 µg/L), and nickel (120 µg/L). No elevated substances were detected in MW-6.

Five inorganic analytes were detected in sediment sample ST01, including cadmium (9.8 mg/kg), copper (152 mg/kg), lead (285 mg/kg), mercury (0.33 JN mg/kg), and cyanide (6.0 mg/kg). Seven organic compounds were detected in ST01, including acetone (72 B µg/kg), fluoranthene (8,200 µg/kg), pyrene (13,000 J µg/kg), chrysene (6,700 B µg/kg), bis(2-ethylhexyl)phthalate (16,000 JB µg/kg), benzo(b)fluoranthene (7,800 J µg/kg), and benzo(k)fluoranthene (5,600 J µg/kg). Acetone was detected in sediment sample ST03 at 320 B µg/kg. Acetone and gamma-chlordane were detected in sediment sample ST04 (32 B µg/kg and 2.3 P µg/kg, respectively).

Three inorganic analytes were detected in soil sample SS02, including cadmium (2.5 mg/kg), sodium (2,240 mg/kg), and cyanide (6.5 mg/kg). Two organic compounds were detected in SS02, including acetone (83 µg/kg) and dieldrin (45 J mg/kg).

One inorganic analyte and three organic compounds were detected in SS03, including sodium (1,850 mg/kg), dieldrin (39 J µg/kg), 4,4'-DDE (4.6 J µg/kg), and 4,4'-DDT (6.3 J µg/kg).

3.9 Key Samples

Key samples contain substances in sufficient concentration to document an observed release. Table 3-2 identifies ESI key samples.

Table 3-2 Key Sample Summary Groundwater (concentrations in μg/L)			
Substance	Sample Number		
	MW06	MW07	MW08 (Background)
Cobalt	Non-detect	117	10.5 B
Iron	Non-detect	35,400	64.1 B
Manganese	Non-detect	9,440	1,620
Nickel	Non-detect	120	15.0 U

Sediment (concentrations in mg/kg)				
Substance	Sample Number			
	ST01	ST02 (Background)	ST03	ST04
Cadmium	9.8	0.73		
Copper	152	23.7		
Lead	285	33.7		
Mercury	0.33 JN	0.09 UJN		
Cyanide	6.0	3.0 U		
Acetone	0.072 B	0.013 UJB	0.320 B	0.032 B
Fluoranthene	8.2	0.034 J		
Pyrene	13 J	0.430 U		
Chrysene	6.7	0.430 U		
Bis (2-ethylhexyl)phthalate	16 JB	0.430 UJ		
Benzo (b) fluoranthene	7.8 J	0.430 U		
Benzo (k) fluoranthene	5.6 J	0.430 U		
Gamma-chlordane		0.0022 U		0.0023 P

Table 3-2 (Continued) Key Sample Summary Soil (concentrations in mg/kg)			
Substance	Sample Number		
	SS01 (Background)	SS02	SS03
Cadmium	0.67 U	2.5	
Sodium	279	2,240	1,850
Cyanide	0.55	6.5	
Acetone	0.009 J	0.083	
Dieldrin	0.0034 J	0.045 J	0.039 J
4,4'-DDE	0.0038 U		0.0046 J
4,4'-DDT	0.0038 U		0.0063 J

U Indicates compound was analyzed for but not detected.
J Estimated value.
N Spiked sample recovery not within control limits.
B Reported value is less than the contract required detection limit, but greater than or equal to the instrument detection limit.
P Greater than 25 percent difference for detected concentrations between the two GC columns. The lower of the two values is reported.

4.0 Characterization of Sources

4.1 Introduction

ESI sample analytical results indicate one source at Roadway: contaminated soil.

4.2 Waste Source - Contaminated Soil

4.2.1 Description

Spills from USTs, trailers, and punctured freight have occurred onsite. It is difficult to estimate the extent and amount of site soil affected because several spills have occurred onsite. A past remedial activity removed an estimated fifty cubic yards of soil suspected to be contaminated by leaking USTs.

Surface soil analytical data reveals the presence of contaminants in the western drainage culvert area. This area is approximately 100 feet by 500 feet.

4.2.2 Waste Characteristics

ESI analytical results indicate the area of affected soil contains releases of inorganic compounds, semi-volatile organic compounds, and pesticides.

Jim Fagan, Roadway health and safety officer, provided a list of past site spills that may have been potential sources of site contamination. Appendix B contains the 1992 site spill log, which includes flammable liquids, combustible liquids, and corrosives. Flammable liquids spilled onsite include benzene, toluene, xylene, and methyl methacryalte. Combustible liquids spilled onsite include methyl n-amyl ketone and petroleum naphtha. Corrosive materials spilled onsite include benzylamine, benzyl dimethylamine, diethylene triamine, propionic acid, and sulfuric acid.

5.0 Discussion of Migration Pathways

5.1 Introduction

This section includes information useful in analyzing the potential impact of contaminants found at the Roadway site on the four migration pathways: groundwater, surface water, air, and soil.

5.2 Groundwater

The 1991 Ecology and Environment screening site inspection (SSI) report states that several aquifers are used in the site area: the unconsolidated glacial drift sediments, the Silurian dolomite bedrock, and numerous Cambrian and Ordovician sandstone formations (Glenwood-St. Peter, Ironton-Galesville, and Mt. Simon). The glacial drift and the Silurian dolomite are hydraulically connected (E&E, 1991). The Ordovician Maquoketa Shale Group is a confining layer that segregates the Silurian dolomite from the Cambrian and Ordovician aquifers. The thickness of the glacial drift near the site varies from 63 to 93 feet; the Silurian dolomite bedrock is approximately 400 feet thick near the site.

Drinking water is supplied to the surrounding community principally from surface water intakes in Lake Michigan or from municipal wells drawing from the Cambrian and Ordovician aquifers beneath the Ordovician Maquoketa Shale Group. It is unlikely that the glacial drift aquifer is used as a drinking water source in the site area (E&E, 1991). The Silurian dolomite aquifer supplies groundwater to approximately 11,000 people from four municipal wells located in Dyer, Indiana, approximately 2.5 miles from the site. The Silurian dolomite also supplies groundwater to approximately 4,823 people from private wells located within three miles of the site. The nearest private well drawing from the Silurian dolomite aquifer is located 0.25 miles north of the site.

Analysis of groundwater samples from the three monitoring wells installed in the glacial drift aquifer document an observed release to that aquifer. As previously noted, most nearby water users receive water from a municipal supply using Lake Michigan as a water source; however, communities and private users drawing water from wells penetrating the Silurian dolomite aquifer within four miles of the site are potentially targets.

5.3 Surface Water

Eight organic compounds and five inorganic analytes were detected in four sediment samples collected in May 1993. The sediment samples were collected from onsite drainage ditches and an adjacent wetland located north and west of the site.

According to Roadway representatives, site runoff is diverted to several drainage ditches located across the site. The ditches drain runoff westward, eventually emptying into three sumps that contain oil/water separators. Site runoff then is discharged north, offsite, through a conduit pipe to a man-made wetland area. From the northern end of the wetland, surface runoff flows to Deer Creek through a mechanized water level pump. Deer Creek eventually empties into Thorn Creek.

Downstream targets along the surface water pathway include wetlands, fisheries, and sensitive environments. The man-made wetland area is located approximately 600 feet west of the site on property owned by the Carolina Trucking Company. No commercial fisheries or surface water drinking water intakes are located along the 15-mile pathway; however, Deer Creek and Thorn Creek may provide sources for recreational fishing. Part of Thorn Creek bisects a Cook County Forest Preserve, approximately 5.75 to 8 miles downstream from the surface water pathway. The 15-mile surface water pathway is comprised of wetlands, as designated by U.S. Fish and Wildlife Service National Wetlands Inventory maps.

5.4 Air

No past or present air sampling has been conducted at the Roadway site. Wind direction onsite is believed to be from west to east. Site topography, generally flat, would allow the wind to blow particulate substances offsite.

Potential air pathway targets include residences, farmland, and sensitive environments. The nearest residences are in a mobile home park, east and adjacent to the site. Farmland is northeast of the site, south of Lincoln Highway. Sensitive environments include the wetland west and adjacent to the site.

5.5 Soil

Site access by the general public is restricted by an 8 foot cyclone fence. Among the soil exposure pathway targets are 1,500 onsite employees. Other potential soil exposure targets, such as the mobile home park residents east of the site and the wetland area west of the site, are more than 200 feet from the site. The estimated population within one mile of the site is 6,009.

indicated the presence of semi-volatile organic compounds and metals in soils at several onsite locations: the northern end of the west drainage ditch, the southwestern corner of the site, the central region of the south drainage ditch, and the eastern end of the south drainage ditch, north of the south terminal.

6.0 References

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U.S. Geological Survey, 1990, topographic map, Dyer, IL, 7.5 minute quadrangle.

U.S. Geological Survey, 1991, topographic map, Harvey, IL, 7.5 minute quadrangle.

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U.S. Fish and Wildlife Service, National Wetlands Inventory, maps of Dyer and Calumet City.

Site Spill List, 1992. Roadway Health and Safety Department.

Appendix A

Roadway Trucking Terminal

15-Mile Surface Water Route Map

SDMS US EPA Region V

Imagery Insert Form

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4-MILE RADIUS MAP

☐ **Other:**

Appendix B

Roadway Trucking Terminal

1992 Site Spill Log

309 SPILLS 1992

DATE	PROPER SHIPPING NAME	HAZARD CLASS	ID#	DESC
01/11/92	Carbon Tetrachloride	ORM-A	UN 1846	Carton was placed with too much force on floor next to the trlr. while stacking the frt. causing the glass jug to break and 1 gallon of product to spill.
01/18/92	Paint	Flammable Liquid	UN 1263	Frt. shifted in transit. 1 5-gallon pail ruptured spilling approx. 2 gallons of flammable liquid (due to lack of blocking).
01/22/92	Paint	Flammable Liquid	UN 1263	Pallet missing boards and nails sticking out of it punctured bottom of can.
01/31/92	Flammable Liquid NOS		UN 1993	Dock worker speared drum on piece of steel in trlr.
02/13/92	Methyl N-Amyl Ketone	Combustible Liquid	NA 1993	Faulty packaging leaked at seam.
02/14/92	Petroleum Naphtha	Combustible Liquid	UN 1255	1 55-gallon drum had pinch hole mid center. Cause unknown.
02/22/92	RQ Diazinon Solution, Insecticide ORM-A	Poison	NA 2793	Insufficient blocking/bracing by loading terminal. Other frt. on top crushed ctn. and loosened lid of bottles. 8 oz. leak.
03/18/92	Carbon Tetrachloride	ORM-A	UN 1846	Appears that a jeep bumped the dock cart the frt. was on and the box fell on its side. A bottle broke inside the ctn.
03/25/92	Benzylamine, Benzyl Dimethylamine	Corrosive Liquid NOS	UN 1760	F/L blades went up into skid and punctured bottom seam of drum causing 2 gallons to leak out.
04/04/92	Paint	Flammable Liquid	UN 1263	Dockworker swinging skid from 1 trlr. to another. Forks on F/L were uneven and 1 pail was punctured.
04/10/92	Trichloroethylene, Cleaning Compound	ORM A	UN 1710	Trlr. not properly blocked at 135. Frt. fell from trlr. when trlr. door was opened upon arrival at 309. smashing

309 SPILLS 1992

DATE	PROPER SHIPPING NAME	HAZARD CLASS	ID#	DESC
04/10/92	Trichloroethylene.			2 1-gallon jars.
04/13/92				Can was punctured while being loaded.
04/20/92				Dock worker crushed box with a F/L while trying to pick up a drum.
04/30/92	Fire Extinguishers	Non Flammable Gas	UN 1044	While unloading trlr., frt. was punctured by F/L blade.
05/07/92	Methyl Alcohol	Flammable Liquid	UN 1230	Stacker struck box with F/L causing 1 1-gallon jug to break and contents to be released.
	Paint	ORM-D		Frt. shifted causing 1 ctn. to get crushed. 1/2 can of spray paint discharged into shrink wrap.
05/09/92	Chemicals NOI. Sealco 309-309WP Concrete Curing Compound	Combustible Liquid	UN 1255	Pails fell from rear of trlr. when opened upon arrival at 309 due to lack of blocking.
	Resin Solution, Polycor Polyester	Flammable Liquid	UN 1866	Exposed metal from drum carrier wore hole in fibreboard drum.
05/10/92	Weed Killing Compound. Trifluralin/Xylene	Flammable Liquid	UN 1993	1 2-gallon bottle punctured by F/L blade extending past skid being moved.
05/12/92	Paint	Combustible Liquid	UN 1263	Skid shifted on F/L while going down ramp. Skid caught on wire mesh on ramp.
06/02/92	Adhesive	Flammable Liquid	UN 1133	F/L puncture while loading at 309.
	Paint Related Materials		UN 1263	Poor packaging by S/. Heavy frt. loaded on top of skid caused skid to crush in transit.
06/06/92	Diethylene Triamine. Hardener	Corrosive Material	UN 1760	F/L puncture while unloading at 309.
	Paint	Flammable Liquid	UN 1263	Pails on rear of trlr. not properly blocked - shifted in transit. Trlr. was stopped at 251 and improperly handled as a leaker at their terminal.

DATE	PROPER SHIPPING NAME	HAZARD CLASS	ID#	DESC
06/11/92	Paint	Flammable Liquid	UN 1263	Heavy crate docked on top of shipment. Crushed lid. 2 oz. spilled.
06/17/92	Paint	Flammable Liquid	UN 1263	Heavy frt. loaded on top crushed frt.
06/18/92	Paint	Flammable Liquid	UN 1263	Frt. either struck by F/L at 521 or heavy frt. loaded on top. Leakage discovered at 309. 1 pail dented approx. 5 oz. released.
	Resin Solution, Polyester Styrene	Flammable Liquid	UN 1866	F/L blade punctured 1 55-gallon drum.
06/19/92	Paint	Flammable Liquid	UN 1263	Crushed. Heavy frt. loaded on top.
		Flammable Liquid	UN 1263	Crushed. Heavy frt. loaded on top.
06/21/92	Plasite 7122, Cold Set Coating Primer	Flammable Liquid	UN 1263	F/L blade grazed pail while loading.
06/22/92	Propionic Acid	Corrosive	UN 1848	Failure to properly block skid caused skid to tip over and 2 cartons were crushed.
	Propionic Acid MOLD-Z	Liquid Corrosive	UN 1848	Failure to prpperly block skid caused skid to tip over and two cartons were crushed.
07/01/92	Methoychlor. Marlate 50	ORM-E	NA 9188	Skid was rammed or speared while loading at origin. 1 4-lb. bag ripped with approx. 6 oz. of material leaking.
07/14/92	Paint	Flammable Liquid	UN 1263	Heavy freight crushing boxes.
07/18/92	Paint	Flammable Liquid	UN 1263	F/L blade punctured pail.
07/25/92	Paint	Combustible Liquid	UN 1263	F/L blade struck freight.
08/03/92	Paint	Flammable	UN 1263	Employee speared drum with F/L blade while unloading skids in front of drums.
08/04/92	Ammonium Crystal Aluminum Sulfate	ORM-E	NA 9078	Skid found leaking at 309. Seems to be a packaging problem. The bags overlapped the edge of the skid and the friction wore a hole in the bag.
	Paint	Combustible Liquid	UN 1263	Carton loaded upside down on

309 SPILLS 1992

DATE	PROPER SHIPPING NAME	HAZARD CLASS	ID#	DESC
08/04/92	Paint			dock cart causing lid to come loose on paint can.
08/07/92	Paint	Flammable Liquid	UN 1263	Carton was loaded on the edge of an empty pallet that was being used as a spacer and was crushed in transit.
08/12/92	Paint	Combustible Liquid	UN 1263	Punctured by customer at customer dock while loading his frt. behind haz mat. (Driver should have shrouded paint before cust. loaded frt.)
08/16/92	Paint	Flammable Liquid	UN 1263	Dock worker unloading sign post from same shipper when post fell onto carton with paint.
08/18/92	Nitric Acid	OXI	UN 2031	Faulty cap.
08/20/92	Paint and Related Materials	Flammable Liquid	UN 1263	While unloading frt. from city trlr.. dock worker smashed frt. with large pole on F/L.
08/23/92	Paint	Flammable Liquid	UN 1263	Dropped while unloading at 309.
09/09/92	Methyl Methacrylate	Flammable Liquid	UN 1247	Freight dropped while unloading at 309.
	Paint	Flammable Liquid	UN 1263	Frt. not properly secured in shuttle trlr. at 309.
		Flammable Liquid	UN 1263	Pails not secured to skid causing a dent in 1 pail and the lid to come off.
09/16/92	Battery, Wet, Filled With Acid	Corrosive	UN 2794	Dock worker punctured battery with F/L blade while working other freight.
09/17/92	Coating Solution	Flammable Liquid	UN 1139	Dock worker speared freight with F/L blade while unloading other freight.
09/27/92	Paint Petroleum Naptha Mixture	Flammable Liquid Combustible Liquid	UN 1263 UN 1255	Punctured by dock worker. While unloading trailer, haz. frt. was crushed by another skid of freight.
10/21/92	Wood Preservative	Flammable Liquid	UN 1306	While moving a skid with F/L, skid fell apart striking frt.

309 SPILLS 1992

DATE	PROPER SHIPPING NAME	HAZARD CLASS	ID#	DESC
10/21/92	Wood Preservative			in trlr. causing damage.
11/10/92	Rosin Flux Thinner	Flammable Liquid	UN 1993	City frt. loaded on trlr. punctured drum. P&D driver did not block. Loaded drums next to steel without protection.
		Flammable Liquid	UN 1993	City trlr. loaded without blocking, punctured by other frt.
11/19/92	Paint	Flammable Liquid	UN 1263	Frt. was crushed while in bay on dock.

Appendix C

Roadway Trucking Terminal

Target Compound List and Target Analyte List

Target Compound List

Volatiles

Chloromethane	1,2-Dichloropropane
Bromomethane	Cis-1,3-Dichloroprpane
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropane
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	Toluene
2-Butanone	1,1,2,2-Tetrachloroethane
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethyl benzene
Bromodichloromethane	Styrene
	Xylenes (total)

SOURCE: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Compound List (continued)

Semivolatiles

Phenol	Acenaphthene
bis(2-Chloroethyl) ether	2,4-Dinitrophenol
2-Chlorophenol	4-Nitrophenol
1,3-Dichlorobenzene	Dibenzofuran
1,4-Dichlorobenzene	2,4-Dinitrotoluene
1,2-Dichlorobenzene	Diethylphthalate
2-Methylphenol	4-Chlorphenyl-phenyl ether
2,2-oxybis-(1-Chloropropane)*	Fluroene
4-Methylphenol	4-Nitroaniline
N-Nitroso-di-n-dipropylamine	4,6-Dinitro-2-methylphenol
Hexachloroethane	N-Nitrosodiphenylamine
Nitrobenzene	4-Bromophenyl-phenyl ether
Isophorone	Hexachlorobenzene
2-Nitrophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenanthrenel
bis(2-Chloroethoxy) methane	Anthracene
2,4-Dichlorophenol	Carbazole
1,2,4-Trichlorobenzene	Di-n-butylphthalate
Naphthalene	Fluoranthene
4-Chloroaniline	Pyrene
Hexachlorobutadiene	Butyl benzyl phthalate
4-Chloro-3-methylhenol	3,3-Dichlorbenzidine
2-Methylnaphthalene	Benzo(a)anthracene
Hexachlorocyclopentadiene	Chrysene
2,46-Trichlorophenol	bis(2-Ethylhexyl)phthalate
2,4,5-Trichlorophenol	Di-n-Octyphthalate
2-Chloronephthalene	Benzo(b)fluoranthene
2-Nitroaniline	Benzo(k)fluoranthene
Dimethylphthalate	Benzp(a)pyrene
Acenaphthylene	Indeno(1,2,3-cd)pyrene
2,6-Dinitrotoluene	Dibenzo(a,h)anthracene
3-Nitroaniline	Benzo(g,h,i)perylene

*Previously known by the name of bis(2-chlorousipropyl) ether.

SOURCE: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Compound List (continued)

Pesticide/PCB

alpha-BHC	4,4-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-chlordane
Aldrin	gamma-chlordane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4-DDD	Aroclor-1254
Endosulfan sulfate	Aroclor-1260

Source: Target Compound List for water and soil containing less than high concentrations of pesticides/aroclors, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Analyte List

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium	Sodium
Cobalt	Thallium
Copper	Vanadium
Iron	Zinc
Lead	Cyanide

SOURCE: Target Analyte List in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Appendix D

Roadway Trucking Terminal

Analytical Results

Appendix D
Table of Contents

DATA REPORTING QUALIFIERS

Definitions for Organic Chemical Data Qualifiers

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N - Indicates presumptive evidence of a compound. This flag is only used for TICs where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, the N code is not used.

P - This flag is used for a pesticide Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P".

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag must be used for a TIC as well as for a positively identified TCL compound

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

DATA REPORTING QUALIFIERS

Definitions for Inorganic Chemical Data Qualifiers

R - Indicates that the data are unusable. The compound may or may not be present.

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantititaion limit.

J - Indicates an estimated value.

B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

E - The reported value is estimated because of the presence of interference.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

** - Duplicate analysis was not within control limits.*

+ - Correlation coefficient for the MSA was less than 0.995.

Volatile Organic Analysis for Groundwater Roadway Trucking Terminal			
Volatile Compound	Sample Location and Number Concentrations in ug/L		
	MW06 ESE07	MW07 ESE08	MW08 ESE09
Chloromethane	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U
Methylene Chloride	10 U	10 U	10 U
Acetone	21 U	12 U	16 U
Carbon Disulfide	10 UJ	10 UJ	10 UJ
1,1-Dichloroethene	10 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U
1,2-Dichloroethane	10 UJ	10 UJ	10 UJ
2-Butanone	10 U	10 U	10 U
1,1,1-Trichloroethane	10 U	10 U	10 U
Carbon Tetrachloride	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U
Trichloroethene	5 J	10 U	10 U
Dibromochloromethane	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U
Benzene	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U
Toluene	10 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U
Styrene	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U
Total Number of TICs *	5	4	7

*Number, not concentration, of tentatively identified compounds (TICs) found in each sample.

Volatile Organic Analysis for Groundwater
Tentatively Identified Compounds
Roadway Trucking Terminal

MW06 (ESE07)

Compound Name	Retention Time	Estimated Concentration (ug/L)
CO2 Background	0.67	23 UJB
Methane, dichlorodifluoro–	0.77	17 UJNB
Clyclotetrasiloxane, octameth	19.73	12 JN
Column Bleed	23.19	7 UJ
Column Bleed	23.46	19 UJB

MW07 (ESE08)

Compound Name	Retention Time	Estimated Concentration (ug/L)
CO2 Background	0.65	120 JB
CO2 Background	0.70	75 J
Methane, dichlorodifluoro–	0.78	53 UJNB
Column Bleed	23.29	17 J

MW08 (ESE09)

Compound Name	Retention Time	Estimated Concentration (ug/L)
CO2 Background	0.60	6 J
CO2 Background	0.65	17 UJB
CO2 Background	0.70	17 J
Methane, dichlorodifluoro–	0.77	27 UJNB
Cyclotetrasiloxane, octameth	19.74	15 JN
Column Bleed	23.16	9 J
Column Bleed	23.33	6 JB

Semivolatile Organic Analysis for Groundwater Roadway Trucking Terminal			
Semivolatile Compound	Sample Location and Number Concentrations in ug/L		
	MW06 ESE07	MW07 ESE08	MW08 ESE09
Phenol	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U
2,2'-Oxybis(1-Chloropropane)	10 UJ	10 UJ	10 UJ
4-Methylphenol	10 U	10 U	10 U
n-Nitroso-di-n-propylamine	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U
2-Nitrophenol	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U
bis(2-Chloroethoxy)Methane	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U
2,4,6-Trichlorophenol	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U
2-Chloronaphthalene	10 U	10 U	10 U
2-Nitroaniline	25 UJ	25 U	25 UJ
Dimethyl Phthalate	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U
Acenaphthene	10 U	10 U	10 U

Semivolatile Organic Analysis for Groundwater Roadway Trucking Terminal			
Semivolatile Compound	Sample Location and Number Concentrations in ug/L		
	MW06 ESE07	MW07 ESE08	MW08 ESE09
2,4-Dinitrophenol	25 UJ	25 UJ	25 UJ
4-Nitrophenol	25 U	25 U	25 U
Dibenzofuran	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U
Diethylphthalate	0.4 J	10 U	10 U
4-Chlorophenyl Phenyl Ether	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U
4-Nitroaniline	25 U	25 U	25 U
4,6-Dinitro-2-Methylphenol	25 U	25 U	25 U
n-Nitrosodiphenylamine	10 U	10 U	10 U
4-Bromophenyl Phenyl Ether	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U
Pentachlorophenol	25 U	25 UJ	25 U
Phenanthrene	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U
di-n-Butylphthalate	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 UJ	10 U	10 UJ
Benzo(a)Anthracene	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	10 UJB	10 UJB	10 UJB
di-n-Octyl Phthalate	10 UJ	10 UJ	10 UJ
Benzo(b)Fluoranthene	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 UJ	10 UJ	10 UJ
Benzo(a)Pyrene	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U
Dibenzo(a,h)Anthracene	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U
Total Number of TICs *	9	13	10

*Number, not concentration, of tentatively identified compounds (TICs) found in each sample.

Semivolatile Organic Analysis for Groundwater
Tentatively Identified Compounds
Raodway Trucking Terminal

MW06 (ESE07)

Compound Name	Retention Time	Estimated Concentrations (ug/L)
Unknown Possible Oxygenated Compound	2.73	3 UJB
Unknown Possible Oxygenated	2.87	6 UJB
Cyclopentane, 2-isopropyl-1	3.59	4 UJNB
Cyclooctane, ethyl- Or Isomer	3.77	7 UJNB
Cylcohexane, 1-methyl-3-(1-m	3.88	8 UJNB
Possible C10H20 Isomer	4.02	3 UJB
Cyclooctane, ethyl- Or Isomer	4.08	4 UJNB
9-Octadecyne or isomer	18.27	4 JNB
Possible Column Bleed	25.35	2 UJB

MW07 (ESE08)

Compound Name	Retention Time	Estimated Concentrations (ug/L)
Unknown Possible Oxygenated Compound	2.67	4 UJB
Unknown Possible Oxygenated	2.80	7 UJB
Cyclopentane, 1-methyl-3(2-	3.51	5 UJNB
Cyclooctane, ethyl- or isomer	3.70	8 UJNB
Cyclopentane, 2-isopropyl-1	3.79	10 UJNB
Cyclopentane, 1-methyl-3(2-	3.95	4 UJNB
Cyclohexane, 1-ethyl-2, 4-dim	4.00	4 JN
Sulfur, mol. (S8)	17.94	7 JN
Possible Acid Ester	19.06	3 J
Octadecanoic acid, 2-methylp	21.15	2 JN
Hexanedioic Acid, Mono(2-eth	21.26	5 JN
Possible Acid Ester	21.46	2 J
C20H42 Alkane	22.08	2 J

MW08 (ESE09)

Compound Name	Retention Time	Estimated Concentrations (ug/L)
Unknown Possible Oxygenated	2.74	3 UJB
Unknown Possible Oxygenated	2.88	6 UJB
Cyclopentane, 2-isopropyl-1	3.58	4 UJNB
Cyclohexane, 1-ethyl-2, 4-dim	3.77	7 UJNB
Cyclopentane, (1-methylbutyl	3.88	9 UJNB
Cyclopentane, 2-isopropyl-1	4.02	5 UJNB
Cyclopentane, (2-methylbutyl	4.08	3 UJNB
Sulfur, mol. (S8)	18.05	17 JN
Hexanedioic Acid, Mono(2-eth	21.34	3 JN
Phosphine oxide, triphenyl-O	22.45	4 UJNB

Pesticide and PCB Analysis for Groundwater Roadway Trucking Terminal			
Pesticide / PCB	Sample Location and Number Concentrations in ug/L		
	MW06 ESE07	MW07 ESE08	MW08 ESE09
Alpha-BHC	0.05 U	0.05 U	0.05 U
Beta-BHC	0.05 U	0.05 U	0.05 U
Delta-BHC	0.05 U	0.05 U	0.05 U
Gamma-BHC (Lindane)	0.05 U	0.05 U	0.05 UJ
Heptachlor	0.05 U	0.05 U	0.05 UJ
Aldrin	0.05 U	0.05 U	0.05 UJ
Heptachlor Epoxide	0.05 U	0.05 U	0.05 U
Endosulfan I	0.05 U	0.05 U	0.05 U
Dieldrin	0.1 U	0.1 U	0.1 UJ
4,4'-DDE	0.1 U	0.1 U	0.1 U
Endrin	0.1 U	0.1 U	0.1 UJ
Endosulfan II	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U
Methoxychlor	0.5 U	0.5 U	0.5 U
Endrin Ketone	0.1 U	0.1 U	0.1 U
Endrin Aldehyde	0.1 U	0.1 U	0.1 U
Alpha-Chlordane	0.05 U	0.05 U	0.05 U
Gamma-Chlordane	0.05 U	0.05 U	0.05 U
Toxaphene	5.0 U	5.0 U	5.0 U
Aroclor-1016	1.0 U	1.0 U	1.0 U
Aroclor-1221	2.0 U	2.0 U	2.0 U
Aroclor-1232	1.0 U	1.0 U	1.0 U
Aroclor-1242	1.0 U	1.0 U	1.0 U
Aroclor-1248	1.0 U	1.0 U	1.0 U
Aroclor-1254	1.0 U	1.0 U	1.0 U
Aroclor-1260	1.0 U	1.0 U	1.0 U

Inorganic Analysis for Groundwater Roadway Trucking Terminal			
Metals and Cyanide	Sample Locations and Number Concentrations in ug/l		
	MW06 METC07	MW07 METC08	MW08 METC09
Aluminum	109 UB	94.8 UB	192 UB
Antimony	27.0 U	27.0 U	27.0 U
Arsenic	3.0 UJW	3.7 JBW	3.0 U
Barium	415	165 B	170 B
Beryllium	1.0 U	1.0 U	1.0 U
Cadmium	3.0 U	3.0 U	3.0 U
Calcium	269000	490000	175000
Chromium	5.0 U	5.0 U	5.0 U
Cobalt	9.4 B	117	10.5 B
Copper	6.0 U	6.0 U	6.0 U
Iron	69.3 B	35400	64.1 B
Lead	2.0 U	2.0 UJW	2.0 U
Magnesium	103000	137000	47700
Manganese	2090	9440	1620
Mercury	0.2 U	0.2 U	0.2 U
Nickel	19.8 B	120	15.0 U
Potassium	6500	4420 B	6010
Selenium	2.0 UJW	2.0 UJW	2.0 UJW
Silver	7.0 U	7.0 U	7.0 U
Sodium	415000 JE	376000 JE	379000 JE
Thallium	3.0 UJNW	30.0 UJNW	30.0 UJN
Vanadium	5.0 U	5.0 U	5.0 U
Zinc	5.1 UB	16.4 UB	2.6 UB
Cyanide	10.0 U	10.0 U	10.0 U

Volatile Organic Analysis for Sediment Roadway Trucking Terminal				
Volatile Compound	Sample Location and Number Concentrations in ug/kg			
	ST01 ESC00	ST02 ESC01	ST03 ESC02	ST04 ESC03
Chloromethane	17 U	13 UJ	30 U	12 U
Bromomethane	17 UJ	13 UJ	30 UJ	12 UJ
Vinyl Chloride	17 U	13 U	30 U	12 U
Chloroethane	17 UJ	13 UJ	30 UJ	12 UJ
Methylene Chloride	17 U	4 UJ	30 U	12 U
Acetone	72 B	13 UJB	320 B	32 B
Carbon Disulfide	17 U	13 U	17 J	12 U
1,1-Dichloroethene	17 U	13 U	30 U	12 U
1,1-Dichloroethane	17 U	13 U	30 U	12 U
1,2-Dichloroethene (total)	17 U	13 U	30 U	12 U
Chloroform	2 J	13 U	30 U	2 J
1,2-Dichloroethane	17 U	13 U	30 U	12 U
2-Butanone	13 J	13 U	97 J	12 U
1,1,1-Trichloroethane	17 UJ	13 U	30 UJ	12 U
Carbon Tetrachloride	17 UJ	13 U	30 UJ	12 U
Bromodichloromethane	17 UJ	13 U	30 UJ	12 U
1,2-Dichloropropane	17 UJ	13 U	30 UJ	12 U
cis-1,3-Dichloropropene	17 UJ	13 U	30 UJ	12 U
Trichloroethene	17 UJ	13 U	30 UJ	12 U
Dibromochloromethane	17 UJ	13 U	30 UJ	12 U
1,1,2-Trichloroethane	17 UJ	13 U	30 UJ	12 U
Benzene	17 UJ	13 U	30 UJ	12 U
trans-1,3-Dichloropropene	17 UJ	13 U	30 UJ	12 U
Bromoform	17 UJ	13 U	30 UJ	12 U
4-Methyl-2-Pentanone	17 UJ	13 U	30 UJ	12 U
2-Hexanone	17 UJ	13 U	30 UJ	12 UJ
Tetrachloroethene	17 UJ	13 U	30 UJ	12 U
1,1,2,2-Tetrachloroethane	17 UJ	13 U	30 UJ	12 U
Toluene	17 UJ	13 U	30 UJ	12 U
Chlorobenzene	17 UJ	13 U	30 UJ	12 U
Ethylbenzene	17 UJ	13 U	30 UJ	12 U
Styrene	17 UJ	13 U	30 UJ	12 U
Xylene (total)	17 UJ	13 U	30 UJ	12 U
Total Number of TICs *	0	0	0	0

*-Number, not concentrations, of tentatively identified compounds (TICs) found in each sample.

Semivolatile Organic Analysis for Sediment Roadway Trucking Terminal				
Semivolatile Compound	Sample Location and Number Concentrations in ug/kg			
	ST01 ESE00	ST02 ESE01	ST03 ESE02	ST04 ESE03
Phenol	5800 U	430 U	1000 U	410 U
bis(2-Chloroethyl)Ether	5800 U	430 U	1000 U	410 U
2-Chlorophenol	5800 U	430 U	1000 U	410 U
1,3-Dichlorobenzene	5800 U	430 U	1000 U	410 U
1,4-Dichlorobenzene	5800 U	430 U	1000 U	410 U
1,2-Dichlorobenzene	5800 U	430 U	1000 U	410 U
2-Methylphenol	5800 U	430 U	1000 U	410 U
2,2'-Oxybis(1-Chloropropane)	5800 U	430 U	1000 U	410 U
4-Methylphenol	360 J	430 U	1000 U	410 U
n-Nitroso-di-n-propylamine	5800 U	430 U	1000 U	410 U
Hexachloroethane	5800 U	430 U	1000 U	410 U
Nitrobenzene	5800 U	430 U	1000 U	410 U
Isophorone	5800 U	430 U	1000 U	410 U
2-Nitrophenol	5800 U	430 U	1000 U	410 U
2,4-Dimethylphenol	5800 U	430 U	1000 U	410 U
bis(2-Chloroethoxy)Methane	5800 U	430 U	1000 U	410 U
2,4-Dichlorophenol	5800 U	430 U	1000 U	410 U
1,2,4-Trichlorobenzene	5800 U	430 U	1000 U	410 U
Naphthalene	5800 U	430 U	1000 U	410 U
4-Chloroaniline	5800 U	430 U	1000 U	410 U
Hexachlorobutadiene	5800 U	430 U	1000 U	410 U
4-Chloro-3-Methylphenol	5800 U	430 U	1000 U	410 U
2-Methylnaphthalene	5800 U	430 U	1000 U	410 U
Hexachlorocyclopentadiene	5800 U	430 U	1000 U	410 U
2,4,6-Trichlorophenol	5800 U	430 U	1000 U	410 U
2,4,5-Trichlorophenol	14000 U	1000 U	2400 U	1000 U
2-Chloronaphthalene	5800 U	430 U	1000 U	410 U
2-Nitroaniline	14000 U	1000 U	2400 U	1000 U
Dimethyl Phthalate	5800 U	430 U	1000 U	410 U
Acenaphthylene	5800 U	430 U	1000 U	410 U
2,6-Dinitrotoluene	5800 U	430 U	1000 U	410 U
3-Nitroaniline	14000 U	1000 U	2400 U	1000 U
Acenaphthene	5800 U	430 U	1000 U	410 U

Semivolatile Organic Analysis for Sediment Roadway Trucking Terminal				
Semivolatile Compound	Sample Location and Number Concentrations in ug/kg			
	ST01 ESE00	ST02 ESE01	ST03 ESE02	ST04 ESE03
2,4-Dinitrophenol	14000 U	1000 U	2400 U	1000 U
4-Nitrophenol	14000 U	1000 U	2400 U	1000 U
Dibenzofuran	5800 U	430 U	1000 U	410 U
2,4-Dinitrotoluene	5800 U	430 U	1000 U	410 U
Diethylphthalate	5800 U	430 U	1000 U	410 U
4-Chlorophenyl Phenyl Ether	5800 U	430 U	1000 U	410 U
Fluorene	5800 U	430 U	1000 U	410 U
4-Nitroaniline	14000 U	1000 U	2400 U	1000 U
4,6-Dinitro-2-Methylphenol	14000 U	1000 U	2400 U	1000 U
n-Nitrosodiphenylamine	5800 U	430 U	1000 U	410 U
4-Bromophenyl Phenyl Ether	5800 U	430 U	1000 U	410 U
Hexachlorobenzene	5800 U	430 U	1000 U	410 U
Pentachlorophenol	14000 UJ	1000 U	2400 U	1000 U
Phenanthrene	3900 J	430 U	130 J	150 J
Anthracene	5800 U	430 U	1000 U	36 J
Carbazole	5800 U	430 U	1000 U	410 U
di-n-Butylphthalate	1300 J	430 U	1000 U	410 U
Fluoranthene	8200	34 J	220 J	290 J
Pyrene	13000 J	430 U	680 J	290 J
Butyl Benzyl Phthalate	5800 UJ	430 U	1000 U	410 U
3,3'-Dichlorobenzidine	5800 UJ	430 UJ	1000 U	410 UJ
Benzo(a)Anthracene	3600 J	430 U	68 J	97 J
Chrysene	6700 J	430 U	10 J	130 J
bis(2-Ethylhexyl)Phthalate	16000 JB	430 JB	1000 UJB	410 UJB
di-n-Octyl Phthalate	5800 J	160 J	1000 U	32 J
Benzo(b)Fluoranthene	7800 J	430 U	110 J	140 J
Benzo(k)Fluoranthene	5600 J	430 U	180 J	100 J
Benzo(a)Pyrene	3200 J	430 U	520 J	75 J
Indeno(1,2,3-cd)Pyrene	5800 UJ	430 U	260 J	35 J
Dibenzo(a,h)Anthracene	5800 UJ	430 U	1000 U	410 U
Benzo(g,h,i)Perylene	5800 UJ	430 U	170 J	410 U
Total Number of TICs *	21	18	21	20

*-Number, not concentration, of tentativley identified compounds (TICs) found in each sample.

Semivolatile Organic Analysis for Sediment
Tentatively Identified Compounds
Roadway Trucking Terminal

Sample ST01 (ESC00)

Compound Name	Retention Time	Estimated Concentration (ug/kg)
2-Pentanone, 4-hydroxy-4-met	2.810	25000 JNA
Unknown Alkane	6.785	5000 J
Unknown Alkane	7.757	4800 J
Unknown Alkane	8.456	8600 J
Unknown Alkane	8.516	7900 J
Unknown Alkane	9.689	5200 J
Unknown Alkane	10.077	10000 J
Unknown Alkane	10.490	6400 J
Unknown Alkane	10.539	8400 J
Unknown Alkane	10.818	2800 J
Unknown Alkane	11.926	3800 J
Unknown Alkane	11.975	4000 J
Unknown Alkane	12.670	3100 J
Unknown Alkane	12.938	3000 J
Unknown Alkane	13.182	4300 J
Unknown Alkane	13.780	2900 J
Unknown Alkane	14.195	3300 J
Unknown Hydrocarbon	14.330	3300 J
Unknown Alkane	14.671	4200 J
Unknown Alkane	14.805	9100 J
Unknown Alkane	15.696	11000 J

Sample ST02 (ESC01)

Compound Name	Retention Time	Estimated Concentrations (ug/kg)
2-Pentanone, 4-hydroxy-4-met	2.980	12000 JNBA
Unknown Organic Acid	12.399	280 J
Unknown	12.507	350 J
Unknown	12.698	280 J
Unknown	13.761	340 J
Unknown	13.869	550 J
Unknown	15.017	5400 J
Unknown	15.114	390 J
Unknown Phthalate	17.135	660 J
Unknown	17.231	4100 J
Unknown Phthalate	17.340	340 J
Unknown	17.411	490 JB
Unknown Phthalate	17.471	480 J
Unknown Phthalate	17.543	350 J
Unknown Alkane	17.675	470 J
Unknown	17.735	620 J
Unknown	17.807	240 J
Unknown Alkane	18.586	440 J

Semivolatile Organic Analysis for Sediment
Tentatively Identified Compounds
Roadway Trucking Terminal

Sample ST03 (ESC02)		
Compound Name	Retention Time	Estimated Concentrations (ug/kg)
2-Pentanone, 4-hydroxy-4-met	2.800	19000 UJNA
Unknown Alkane	10.381	1200 J
Unknown Alkane	11.138	1600 J
Unknown Organic Acid	12.352	1100 J
Unknown Alkane	13.230	850 J
Unknown Alkane	14.484	2100 J
Unknown	14.967	5900 J
Unknown	15.329	1000 J
Unknown Alkane	15.631	3400 J
Unknown Alkane	16.163	980 J
Unknown Alkane	16.694	3400 J
Unknown Cycloalkane	16.718	2700 J
Unknown	17.202	3200 J
Unknown	17.516	1200 J
Unknown Alkane	17.672	3100 J
Unknown Cycloalkane	17.733	2300 J
Unknown	17.793	1600 J
Unknown	18.578	4300 J
Unknown Hydrocarbon	18.662	1500 J
Unknown Hydrocarbon	20.035	2600 J
Unknown Hydrocarbon	20.516	1200 J
Sample ST04 (ESC03)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
2-Pentanone, 4-hydroxy-4-met	2.990	11000 UJNBA
Unknown Alkane	9.643	270 J
Unknown Alkane	10.446	320 J
Unknown Alkane	10.482	260 J
Unknown Alkane	11.202	560 J
Unknown Alkane	11.923	220 J
Unknown Hydrocarbon	12.284	400 J
Unknown	12.332	250 J
Unknown Organic Acid	12.416	500 J
Unknown Alkane	13.270	230 J
Unknown	13.608	620 J
Unknown	13.752	330 J
Unknown	13.873	420 J
Unknown Alkane	13.909	450 J
Unknown Alkane	14.512	350 J
Unknown	14.994	3400 J
Unknown Alkane	15.091	470 J
Unknown Alkane	15.645	390 J
Unknown	17.201	3200 J
Unknown	18.787	800 J

Pesticide and PCB Analysis for Sediment Roadway Trucking Terminal				
Pesticide / PCB	Sample Location and Number Concentrations in ug/kg			
	ST01 ESC00	ST02 ESC01	ST03 ESC02	ST04 ESC03
Alpha-BHC	2.9 UJ	2.2 U	5.2 U	2.1 U
Beta-BHC	2.9 UJ	2.2 U	5.2 U	2.1 U
Delta-BHC	2.9 UJ	2.2 U	5.2 U	2.1 U
Gamma-BHC (Lindane)	2.9 UJ	2.2 U	5.2 U	2.1 U
Heptachlor	2.9 UJ	2.2 U	5.2 U	2.1 U
Aldrin	2.9 UJ	2.7	5.2 U	2.1 U
Heptachlor Epoxide	2.9 UJ	2.2 U	5.2 U	2.1 U
Endosulfan I	2.9 UJ	2.1 U	5.2 U	2.1 U
Dieldrin	5.7 UJ	110 D	10 U	5.6 P
4,4'-DDE	5.7 UJ	50	10 U	16
Endrin	5.7 UJ	4.3 U	10 U	4.1 U
Endosulfan II	5.7 UJ	4.3 U	10 U	4.1 U
4,4'-DDD	5.7 UJ	10 P	10 U	7.1 P
Endosulfan Sulfate	5.7 UJ	4.3 U	10 U	4.1 U
4,4'-DDT	5.7 UJ	63 D	10 U	20 P
Methoxychlor	29 UJ	22 U	52 U	21 U
Endrin Ketone	5.7 UJ	4.3 U	10 U	4.1 U
Endrin Aldehyde	5.7 UJ	4.4 P	10 U	4.8 P
Alpha-Chlordane	2.9 UJ	2.2 U	5.2 U	2.1 J
Gamma-Chlordane	2.9 UJ	2.2 U	5.2 U	2.3 P
Toxaphene	290 UJ	220 U	520 U	210 U
Aroclor-1016	57 UJ	43 U	100 U	41 U
Aroclor-1221	120 UJ	87 U	200 U	84 U
Aroclor-1232	57 UJ	43 U	100 U	41 U
Aroclor-1242	57 UJ	43 U	100 U	41 U
Aroclor-1248	57 UJ	43 U	100 U	41 U
Aroclor-1254	57 UJ	43 U	100 U	41 U
Aroclor-1260	57 UJ	43 U	100 U	41 U

Inorganic Analysis for Sediment Roadway Trucking Terminal				
Metals and Cyanide	Sample Locations and Number Concentrations in mg/kg			
	ST01 METC00	ST02 METC01	ST03 METC02	ST04 METC03
Aluminum	13600 JE	18700 JE	9810 JE	12400 JE
Antimony	12.7 JBN	6.4 UJN	20.4 UJN	10.5 JBN
Arsenic	7.2 JNS	10 JBNW	5.2 JBN	6.2 JBN
Barium	201 JE	93.8 JE	57.3 JBE	75.3 JE
Beryllium	1.4 B	1.7	1.7 B	1.1 B
Cadmium	9.8	0.73 B	1.7 B	0.54 B
Calcium	37600 JE	3840 JE	25100 JE	52900 JE
Chromium	86.1 JE	26.5 JE	14.6 JE	18.9 JE
Cobalt	9.4 B	13.0	20.2 B	9.4 B
Copper	152	23.7	33.1	23.5
Iron	22200 JE	21700 JE	39000 JE	18000 JE
Lead	285	33.7	2.4 W	72.8
Magnesium	21500 JE	4780 JE	5700 JE	31300 JE
Manganese	256 JE	246 JE	437 JE	452 JE
Mercury	0.33 JN	0.09 UJN	0.28 UJN	0.09 UJN
Nickel	30.0	30.6	48.3	18.4
Potassium	2610	3370	1760 JB	2340
Selenium	4.9 JNS	0.38 RUNW	1.1 RUNW	0.39 JBNW
Silver	0.47 RUN	0.36 RUN	1.1 RUN	0.36 RUN
Sodium	1820 JE	1300 JE	1620 JBE	821 JBE
Thallium	0.26 UJW	0.19 U	0.53 UJW	0.19 JBW
Vanadium	34.7	35.3	22.9 JB	28.5
Zinc	844 JE	70.4 JE	94.8 JE	80.9 JE
Cyanide	6.0	3.0 U	9.1 U	2.9 U

Volatile Organic Anaysis for Surface Soil Roadway Trucking Terminal			
Volatile Compound	Sample Location and Number Concentrations in ug/kg		
	SS01 ESC04	SS02 ESC05	SS03 ESC06
Chloromethane	11 U	14 U	14 U
Bromomethane	11 U	14 U	14 U
Vinyl Chloride	11 U	14 U	14 U
Chloroethane	11 U	14 U	14 U
Methylene Chloride	11 U	14 U	2 J
Acetone	9 J	83	11 J
Carbon Disulfide	11 UJ	14 UJ	14 UJ
1,1-Dichloroethene	11 U	14 U	14 U
1,1-Dichloroethane	11 U	14 U	14 U
1,2-Dichloroethene (total)	11 U	14 U	14 U
Chloroform	11 U	14 U	14 U
1,2-Dichloroethane	11 U	14 U	14 U
2-Butanone	11 U	14 U	14 U
1,1,1-Trichloroethane	11 U	14 U	14 U
Carbon Tetrachloride	11 U	14 U	14 U
Bromodichloromethane	11 U	14 U	14 U
1,2-Dichloropropane	11 U	14 U	14 U
cis-1,3-Dichloropropene	11 U	14 U	14 U
Trichloroethene	11 U	14 U	14 U
Dibromochloromethane	11 U	14 U	14 U
1,1,2-Trichloroethane	11 U	14 U	14 U
Benzene	11 U	14 U	14 U
trans-1,3-Dichloropropene	11 U	14 U	14 U
Bromoform	11 U	14 U	14 U
4-Methyl-2-Pentanone	11 U	14 U	14 U
2-Hexanone	11 U	14 U	14 U
Tetrachloroethene	11 U	14 U	14 U
1,1,2,2-Tetrachloroethane	11 U	14 U	14 U
Toluene	11 U	14 U	14 U
Chlorobenzene	11 U	14 U	14 U
Ethylbenzene	11 U	14 U	14 U
Styrene	11 U	14 U	14 U
Xylene (total)	11 U	14 U	14 U
Total Number of TICs *	3	2	3

*-Number, not concentration, of tentatively identified compounds (TICs) found in each sample.

Volatile Organic Analysis for Surface Soil
Tentatively Identified Compounds
Roadway Trucking Terminal

Sample SS01 (ESC04)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
CO2 Background	0.74	51 UJB
CO2 Background	1.24	25 UJB
CO2 Background	1.48	18 UJB
Sample SS02 (ESC05)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
CO2 Background	0.74	110 UJB
CO2 Background	1.25	26 UJB
Sample SS03 (ESC06)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
CO2 Background	0.73	270 UJB
CO2 Background	1.23	56 UJB
CO2 Background	1.45	39 UJB

Semivolatile Organic Analysis for Surface Soil Roadway Trucking Terminal			
Semivolatile Compound	Sample Location and Number Concentrations in ug/kg		
	SS01 ESC04	SS02 ESC05	SS03 ESC06
Phenol	1500 U	3800 U	1900 U
bis(2-Chloroethyl)Ether	1500 U	3800 U	1900 U
2-Chlorophenol	1500 U	3800 U	1900 U
1,3-Dichlorobenzene	1500 U	3800 U	1900 U
1,4-Dichlorobenzene	1500 U	3800 U	1900 U
1,2-Dichlorobenzene	1500 U	3800 U	1900 U
2-Methylphenol	1500 U	3800 U	1900 U
2,2'-Oxybis(1-Chloropropane)	1500 U	3800 U	1900 U
4-Methylphenol	1500 U	3800 U	1900 U
n-Nitroso-di-n-propylamine	1500 U	3800 U	1900 U
Hexachloroethane	1500 U	3800 U	1900 U
Nitrobenzene	1500 U	3800 U	1900 U
Isophorone	1500 U	3800 U	1900 U
2-Nitrophenol	1500 U	3800 U	1900 U
2,4-Dimethylphenol	1500 U	3800 U	1900 U
bis(2-Chloroethoxy)Methane	1500 U	3800 U	1900 U
2,4-Dichlorophenol	1500 U	3800 U	1900 U
1,2,4-Trichlorobenzene	1500 U	3800 U	1900 U
Naphthalene	1500 U	3800 U	1900 U
4-Chloroaniline	1500 U	3800 U	1900 U
Hexachlorobutadiene	1500 U	3800 U	1900 U
4-Chloro-3-Methylphenol	1500 U	3800 U	1900 U
2-Methylnaphthalene	1500 U	3800 U	1900 U
Hexachlorocyclopentadiene	1500 U	3800 U	1900 U
2,4,6-Trichlorophenol	1500 U	3800 U	1900 U
2,4,5-Trichlorophenol	3700 U	9100 U	4500 U
2-Chloronaphthalene	1500 U	3800 U	1900 U
2-Nitroaniline	3700 U	9100 U	4500 U
Dimethyl Phthalate	1500 U	3800 U	1900 U
Acenaphthylene	1500 U	3800 U	1900 U
2,6-Dinitrotoluene	1500 U	3800 U	1900 U
3-Nitroaniline	3700 U	9100 U	4500 U
Acenaphthene	1500 U	3800 U	1900 U

Semivolatile Organic Analysis for Surface Soil Roadway Trucking Terminal			
Semivolatile Compound	Sample Location and Number Concentrations in ug/kg		
	SS01 ESC04	SS02 ESC05	SS03 ESC06
2,4–Dinitrophenol	3700 UJ	9100 J	4500 UJ
4–Nitrophenol	3700 U	9100 U	4500 U
Dibenzofuran	1500 U	3800 U	1900 U
2,4–Dinitrotoluene	1500 U	3800 U	1900 U
Diethylphthalate	1500 U	3800 U	1900 U
4–Chlorophenyl Phenyl Ether	1500 U	3800 U	1900 U
Fluorene	1500 U	3800 U	1900 U
4–Nitroaniline	3700 U	9100 U	4500 U
4,6–Dinitro–2–Methylphenol	3700 U	9100 U	4500 U
n–Nitrosodiphenylamine	1500 U	3800 U	1900 U
4–Bromophenyl Phenyl Ether	1500 U	3800 U	1900 U
Hexachlorobenzene	1500 U	3800 U	1900 U
Pentachlorophenol	3700 UJ	9100 UJ	4500 UJ
Phenanthrene	140 J	260 J	1900 U
Anthracene	1500 U	3800 U	1900 U
Carbazole	1500 U	3800 U	1900 U
di–n–Butylphthalate	420 UJB	3800 U	1900 UJB
Fluoranthene	420 J	390 J	51 J
Pyrene	320 J	250 J	37 J
Butyl Benzyl Phthalate	1500 U	3800 U	1900 U
3,3'–Dichlorobenzidine	1500 U	3800 U	1900 U
Benzo(a)Anthracene	210 J	3800 U	1900 U
Chrysene	310 J	3800 U	1900 U
bis(2–Ethylhexyl)Phthalate	310 UJB	3800 UJB	1900 UJB
di–n–Octyl Phthalate	1500 U	3800 U	1900 U
Benzo(b)Fluoranthene	570 J	670 J	76 J
Benzo(k)Fluoranthene	1500 UJ	3800 UJ	1900 UJ
Benzo(a)Pyrene	290 J	380 J	1900 U
Indeno(1,2,3–cd)Pyrene	380 J	940 J	1900 U
Dibenzo(a,h)Anthracene	1500 U	3800 U	1900 U
Benzo(g,h,i)Perylene	300 J	900 J	1900 U
Total Number of TICs *	7	3	14

*–Number, not concentration, of tentatively identified compounds (TICs) found in each sample

Semivolatile Organic Analysis for Surface Soil
Tentatively Identified Compounds
Roadway Trucking Terminal

Sample SS01 (ESC04)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
Hexanedioic Acid, Mono(2-Eth	20.62	11000 UJNB
Alkane	22.99	330 J
Benzo(e)pyrene or Isomer	24.03	660 JN
Possible Alkene or Alcohol	24.48	3100 J
Alkane	25.85	830 J
Gamma-Sitosterol or Isomer	27.58	640 JN
Unknown	28.93	380 J

Sample SS02 (ESC05)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
Alkane	15.04	1100 J
Hexanedioic Acid, Mono(2-Eth	20.63	15000 UJNB
Possible Oxygenated Compound	21.93	940 J

Sample SS03 (ESC06)		
Compound Name	Retention Time	Estimated Concentration (ug/kg)
Possible Acid Ester	8.50	470 UJB
Unknown Phthalate	15.65	1200 J
Possible Alkene or Alcohol	17.58	630 UJB
Alkane	19.74	510 J
Hexanedioic Acid, Mono(2-Eth	20.61	4500 UJNB
Alkane	21.42	1100 J
Alkane	22.23	520 J
Alkane	22.99	1500 J
Alkane	24.46	1700 J
Alkane	25.85	660 J
Possible Alkene or Alcohol	25.90	410 J
Possible Oxygenated Compound	26.88	390 J
Possible Oxygenated Compound	27.08	640 J
Possible Gamma Sitosterol	27.57	690 J

Pesticide and PCB Analysis for Surface Soil Roadway Trucking Terminal			
Pesticide / PCB	Sample Location and Number Concentrations in ug/kg		
	SS01 ESC04	SS02 ESC05	SS03 ESC06
Alpha–BHC	2.0 U	2.4 UJ	2.4 UJ
Beta–BHC	2.0 U	2.4 UJ	2.4 UJ
Delta–BHC	2.0 U	2.4 UJ	2.4 UJ
Gamma–BHC (Lindane)	2.0 U	2.4 UJ	2.4 UJ
Heptachlor	2.0 U	2.4 UJ	2.4 UJ
Aldrin	2.0 U	2.4 UJ	2.4 UJ
Heptachlor Epoxide	2.0 U	2.4 UJ	2.4 UJ
Endosulfan I	2.0 U	2.4 UJ	2.4 UJ
Dieldrin	3.4 J	45 J	39 J
4,4'–DDE	3.8 U	4.7 UJ	4.6 J
Endrin	3.8 U	4.7 UJ	4.6 UJ
Endosulfan II	3.8 U	4.7 UJ	4.6 UJ
4,4'–DDD	3.8 U	4.7 UJ	1.7 UJP
Endosulfan Sulfate	3.8 U	4.7 UJ	4.6 UJ
4,4'–DDT	3.8 U	4.7 UJ	6.3 J
Methoxychlor	20 U	24 UJ	24 UJ
Endrin Ketone	3.8 U	4.7 UJ	4.6 UJ
Endrin Aldehyde	3.8 U	4.7 UJ	4.6 UJ
Alpha–Chlordane	2.0 U	2.4 UJ	2.4 UJ
Gamma–Chlordane	2.0 U	2.4 UJ	2.4 UJ
Toxaphene	200 U	240 UJ	240 UJ
Aroclor–1016	38 U	47 UJ	46 UJ
Aroclor–1221	77 U	96 UJ	94 UJ
Aroclor–1232	38 U	47 UJ	46 UJ
Aroclor–1242	38 U	47 UJ	46 UJ
Aroclor–1248	38 U	47 UJ	46 UJ
Aroclor–1254	38 U	47 UJ	46 UJ
Aroclor–1260	38 U	47 UJ	46 UJ

Inorganic Analysis for Surface Soil Roadway Trucking Terminal			
Metals and Cyanide	Sample Locations and Number Concentrations in mg/kg		
	SS01 METC04	SS02 METC05	SS03 METC06
Aluminum	21400	19800	25500
Antimony	7.8 JBN	10.8 JBN	10.3 JBN
Arsenic	6.4 S	7.2	6.5
Barium	417	129	139
Beryllium	1.1 B	1.1 B	1.3 B
Cadmium	0.67 U	2.5	0.8 U
Calcium	21100 J	18000 J	10100 J
Chromium	31.6	35.5	34.4
Cobalt	13.8	10.2	13.8
Copper	23.6	35.9	27.7
Iron	27000	23800	25900
Lead	57.8 JW	59.7 JW	25.0
Magnesium	14100 J	12600 J	7930 J
Manganese	784 N	374 N	517 N
Mercury	0.11 U	0.14 U	0.13 U
Nickel	30.2	27.8	37.3
Potassium	4840	4110	4360
Selenium	0.44 RUNW	3.6 JNS	1.6 JNS
Silver	1.6 U	2.0 U	1.9 U
Sodium	279 B	2240	1850
Thallium	0.67 U	0.86 U	0.80 U
Vanadium	43.2	38.5	46.6
Zinc	126	231	94.0
Cyanide	0.55 U	6.5	0.67 U

Appendix E

Roadway Trucking Terminal

Site Photographs

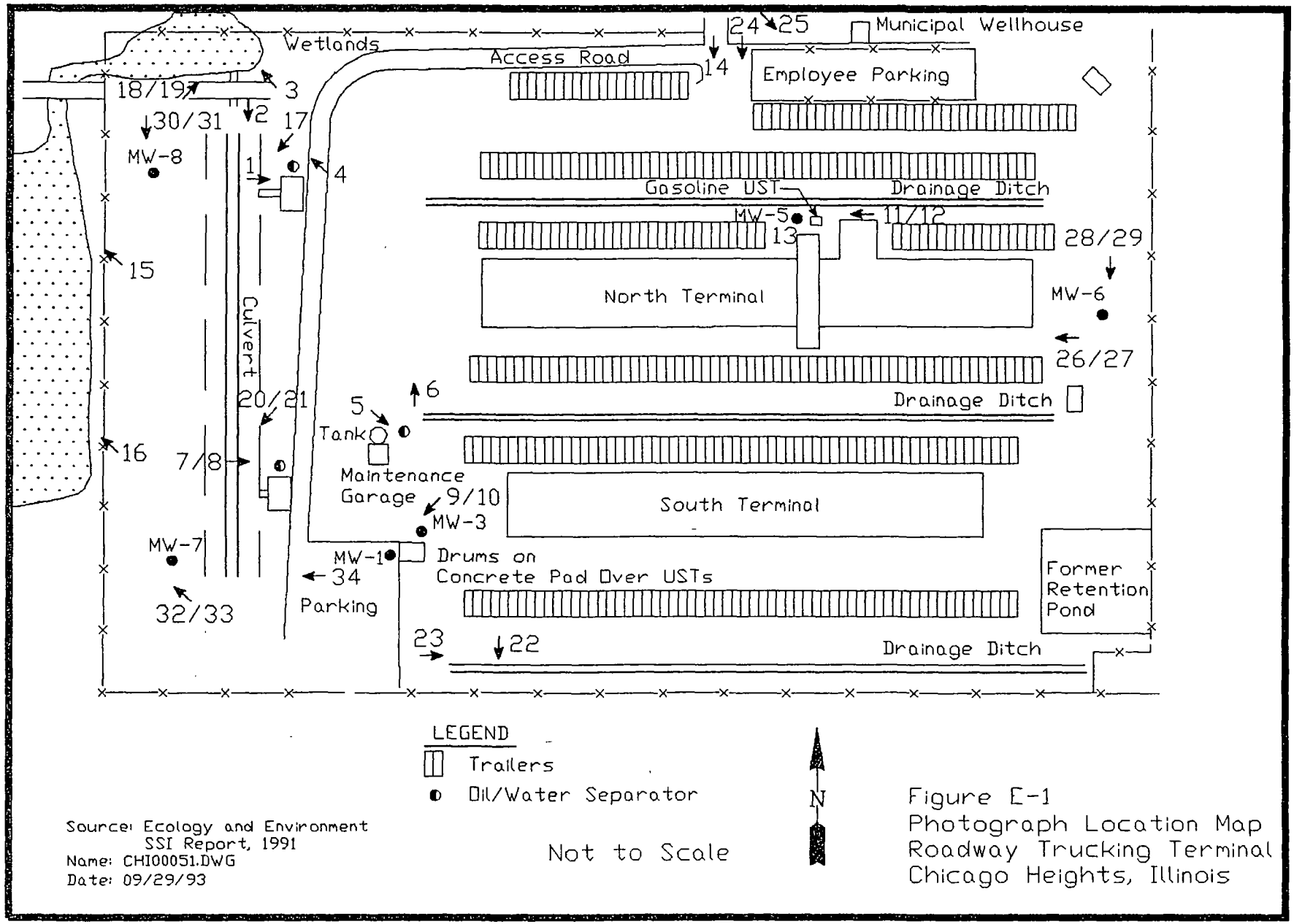


Figure E-1
Photograph Location Map
Roadway Trucking Terminal
Chicago Heights, Illinois

Date: 08-12-92

Time: 1058

Photo Taken By: J. Albano

Photo Number: 01

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: East

Description: Discharge of site to retention ditch. Note spill boom. Discharge located at northwest section of site.

Date: 08-12-92

Time: 1059

Photo Taken By: J. Albano

Photo Number: 02

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: View of retention ditch looking south along western border of site.

Date: 08-12-92

Time: 1100

Photo Taken By: J. Albano

Photo Number: 03

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: North

Description: View of retention dicth leading to wetland area, north of the ditch.

Date: 08-12-92

Time: 1108

Photo Taken By: J. Albano

Photo Number: 04

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: View of oil/water separator located to the east of the retention ditch.

Date: 08-12-92

Time: 1117

Photo Taken By: J. Albano

Photo Number: 05

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southwest

Description: Passive oil/water separator located within the terminal lot.

Date: 08-12-92

Time: 1117

Photo Taken By: J. Albano

Photo Number: 06

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: View of passive oil/water separator. Collected drain runs north, between the parked semis.

Date: 08-12-92

Time: 1120

Photo Taken By: J. Albano

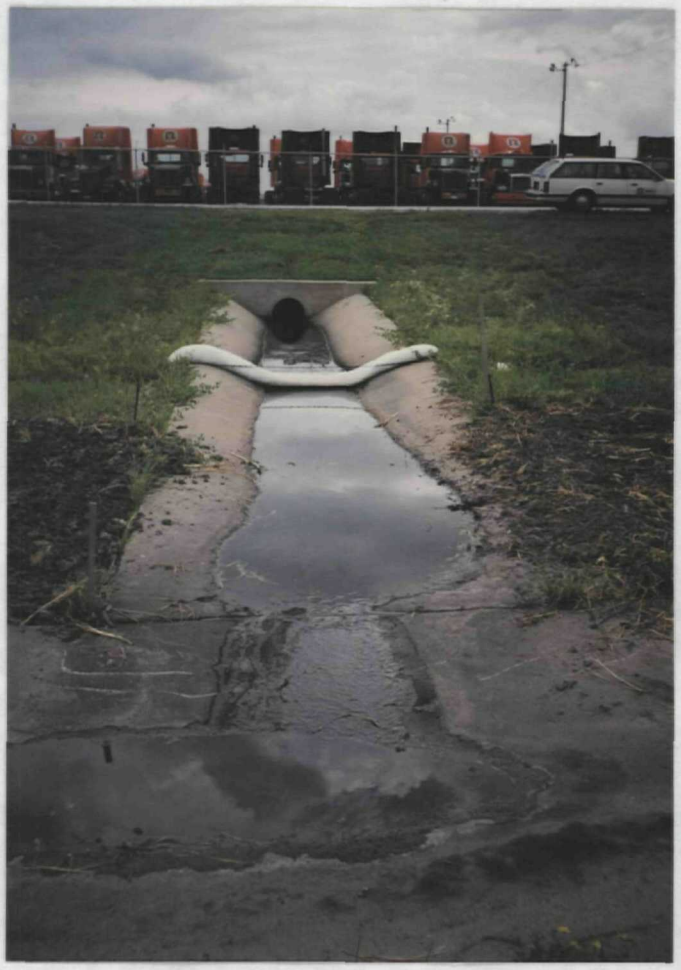
Photo Number: 07

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Discharge located at the southwest corner of site.



Date: 08-12-92

Time: 1125

Photo Taken By: J. Albano

Photo Number: 08

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Oil/water separator located at southwest corner of site. (see photo 7)

Date: 08-12-92

Time: 1130

Photo Taken By: J. Albano

Photo Number: 09

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southwest

Description: Diesel UST area located near the southwest corner of the site. Note tank cover left of car.

Date: 08-12-92

Time: 1132

Photo Taken By: J. Albano

Photo Number: 10

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northeast

Description: Grant Wilks (kneeling) identifies a dry tank location.

Date: 08-12-92

Time: 1145

Photo Taken By: J. Albano

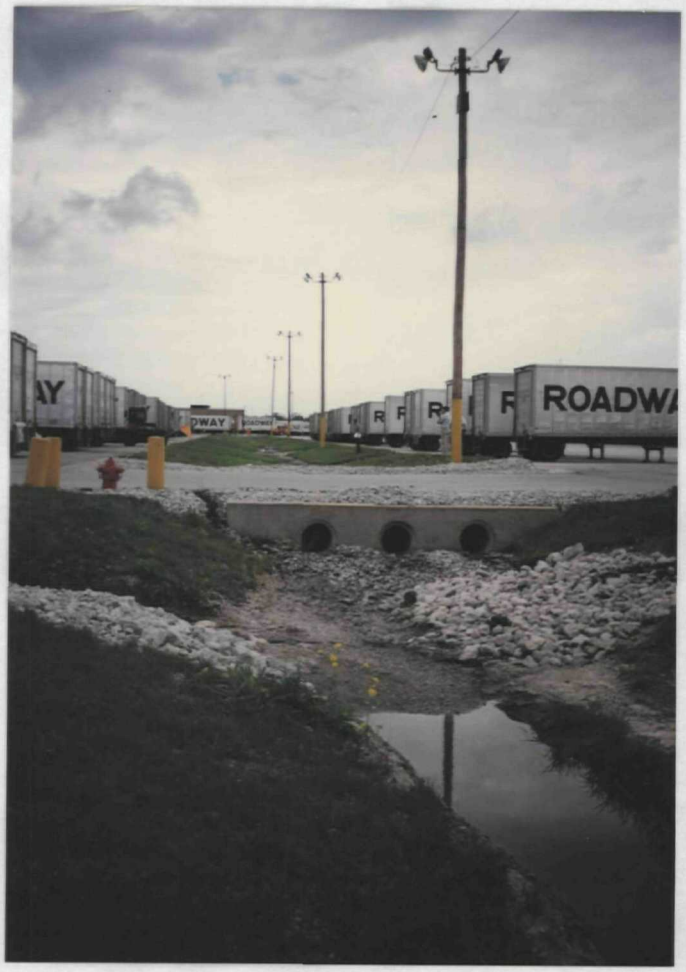
Photo Number: 11

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Discharge ditch running east-west, located near the north section of the site. Staining or oil sheen was not observed near or in standing water.



Date: 02-12-92

Time: 1146

Photo Taken By: J. Albano

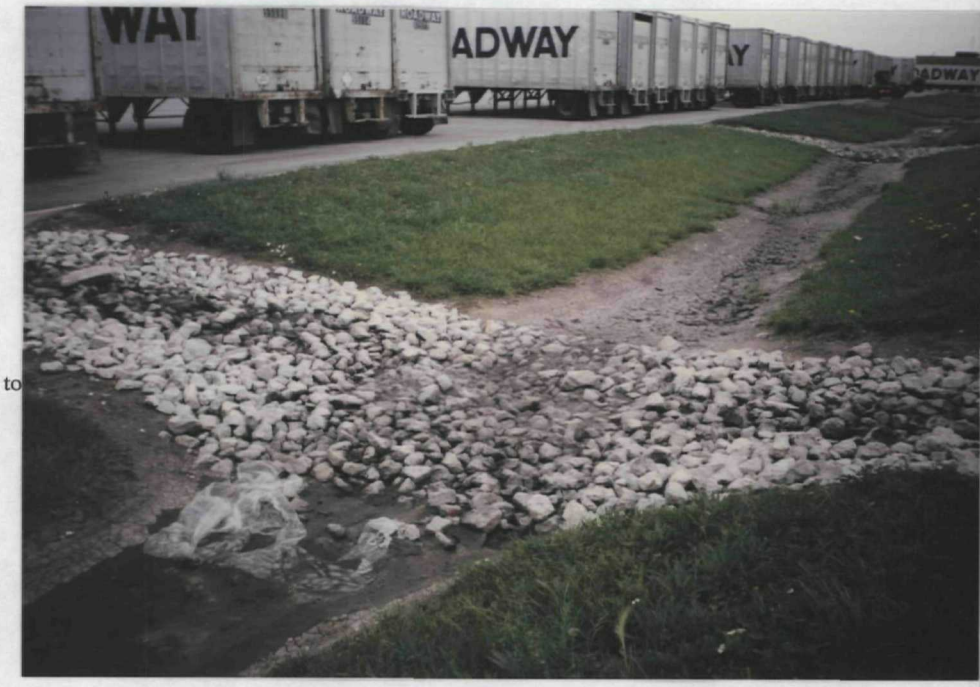
Photo Number: 12

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Note discharge ditches leading to east-west drainage ditch. No discolored soil observed.



Date: 02-12-92

Time: 1220

Photo Taken By: J. Albano

Photo Number: 13

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: G. Wilks (kneeling) identifies dry tank location.

Date: 08-12-92

Time: 1245

Photo Taken By: J. Albano

Photo Number: 14

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: View of Roadway Trucking Terminal entrance.

Date: 05-17-93

Time: 0945

Photo Taken By: J. Albano

Photo Number: 15

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: Sediment sample ST04 location.

Date: 05-17-93

Time: 0950

Photo Taken By: J. Albano

Photo Number: 16

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: Soil sample SS02.

Date: 05-17-93

Time: 0952

Photo Taken By: J. Albano

Photo Number: 17

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Expanded view of soil sampling location SS02.

Date: 05-17-93

Time: 1035

Photo Taken By: J. Albano

Photo Number: 18

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northeast

Description: Sediment sample location ST01.

Date: 05-17-93

Time: 1036

Photo Taken By: J. Albano

Photo Number: 19

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northeast

Description: Expanded view of sediment sample location ST01.

Date: 05-17-93

Time: 1045

Photo Taken By: J. Albano

Photo Number: 20

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southwest

Description: Soil sample location SS03.

Date: 05-17-93

Time: 1046

Photo Taken By: J. Albano

Photo Number: 21

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southwest

Description: Expanded view of soil sample location SS03.

Date: 05-17-93

Time: 1100

Photo Taken By: J. Albano

Photo Number: 22

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: Sediment sample location ST02.

Date: 05-17-93

Time: 1102

Photo Taken By: J. Albano

Photo Number: 23

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southeast

Description: Expanded view of sediment sample ST02.

Date: 05-17-93

Time: 1115

Photo Taken By: J. Albano

Photo Number: 24

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: Soil sample location SS01.

Date: 05-17-93

Time: 1116

Photo Taken By: J. Albano

Photo Number: 25

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Southeast

Description: Expanded view of soil sample location SS01.

Date: 05-17-93

Time: 1700

Photo Taken By: J. Albano

Photo Number: 26

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Soil/sediment sample coolers.

Date: 05-17-93

Time: 1701

Photo Taken By: J. Albano

Photo Number: 27

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Soil/sediment coolers.

Date: 05-18-93

Time: 1105

Photo Taken By: J. Albano

Photo Number: 28

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: Groundwater sample location MW06.

Date: 05-18-93

Time: 1106

Photo Taken By: J. Albano

Photo Number: 29

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: Expanded view of groundwater sampling location MW06.

Date: 05-18-93

Time: 1420

Photo Taken By: J. Albano

Photo Number: 30

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: View of groundwater sampling location MW08.

Date: 02-11-92

Time: 1140

Photo Taken By: J. Albano

Photo Number: 31

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: South

Description: Expanded view of groundwater sample location MW08.

Date: 05-18-93

Time: 1550

Photo Taken By: J. Albano

Photo Number: 32

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northwest

Description: View of groundwater sample location MW07.

Date: 05-18-93

Time: 1551

Photo Taken By: J. Albano

Photo Number: 33

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: Northeast

Description: Expanded view of groundwater sample MW07.

Date: 05-18-93

Time: 1830

Photo Taken By: J. Albano

Photo Number: 34

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Groundwater sample coolers.

Date: 05-18-93

Time: 1830

Photo Taken By: J. Albano

Photo Number: 35

Site: Roadway Trucking Terminal

Location/ILD #: ILD980677843

Direction of Photo: West

Description: Groundwater sample coolers.

Appendix F

Roadway Trucking Terminal

Boring and Well Installation Logs

WASTE SCIENCE AND TECHNOLOGY CORP.

LOG OF BORING

BORING NO. MW06
SHEET 1 OF 1

CLIENT	PROJECT	PROJECT NO.
USEPA	Roadway ESI	70720.142

PROJECT LOCATION	COORDINATES	ELEVATION (DATUM)	TOTAL DEPTH	DATE START
Chicago Heights, Illinois	unknown	399.4' (see remarks)	27.0 FEET	5/10/93

SURFACE CONDITIONS	LOGGED BY	DATE FINISH
flat, grass-covered, east of north terminal	J. Quinn	5/10/93

CHECKED BY: J.P. Chitwood
APPROVED BY: B. Rundell

SAMPLING: SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	CORING: CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD	DEPTH IN FEET	CLASSIFICATION OF MATERIAL	REMARKS
														1	CLAY; brown to dark brown; firm; high plasticity; moist; some sand; roots (topsoil)	Boring advanced using 8" O.D. 4 1/4" I.D. hollow stem auger. Split spoon samples taken by pushing the sampler.
														2	Clayey SILT; reddish-brown to gray; stiff; low plasticity; moist; some sand (till)	
														3		
														4		
SPT	2					–							1.6	5		
														6		
														7		
														8		
														9	Clayey SAND; reddish-brown to gray; medium dense; moderately graded; fine grained; subrounded; moist; trace thin-bedded clay (outwash or alluvium)	
SPT	3					–							1.4	10		
														11		
														12		
														13		
														14	SILT; gray; stiff; low plasticity; moist; trace clay (lacustrine or alluvial deposit)	
SPT	4					–							1.6	15		
														16		
														17		
														18		
														19	SAND, gray; poorly graded; fine grained; subrounded; wet (outwash)	Water encountered at 19 feet.
SPT	5					–							0.1	20		
														21		
														22		
														23		
														24		
														25		
														26		
														27		Bottom of boring at 27 feet. No water level recorded. Monitoring well installed on 5/10/93. Ground elevation relative to top of riser elevation of MW-08 which was assumed to be 400.00'.
														28		
														29		

NATIONAL SCIENCE AND TECHNOLOGY CORP.

LOG OF BORING

BORING NO. MW07
SHEET 1 OF 1

CLIENT	PROJECT	PROJECT NO.
USEPA	Roadway ESI	70720.142

PROJECT LOCATION	COORDINATES	ELEVATION (DATUM)	TOTAL DEPTH	DATE START
Chicago Heights, Illinois	unknown	399.6' (see remarks)	22.0 FEET	5/11/93

SURFACE CONDITIONS	LOGGED BY	DATE FINISH
Flat, grass-covered; southwest of terminal	D. Ingram	5/11/93

CHECKED BY: J.P. Chitwood
APPROVED BY: B. Rundell

SAMPLING: SAMPLE TYPE	SAMPLE NUMBER	SET 0 INCHES	2ND 0 INCHES	3RD 0 INCHES	N VALUE	SAMPLE RECOVERY
CORING: CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	ROD
SPT	1	10	7	6/5	13	0.3
SPT	2	5	6	7/6	13	1.1
SPT	3	1	0	1/0	1	2.0
SPT	4	5	6	7/7	13	1.4
SPT	5	5	5	5/1	10	2.0

DEPTH IN FEET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

SAMPLE TYPE / GRAPHIC LOG

CLASSIFICATION OF MATERIAL

Silty CLAY; dark brown, stiff; high plasticity; moist; trace roots (topsoil)

grades to gray-dark gray @ 6'

CLAY; greenish-gray; soft; high plasticity; moist to wet; trace sand.

grading stiff @ 15.5'

grading w/ some sand @ 16.9'

SAND; gray; loose, well graded; fine to coarse grained; subrounded; wet (outwash)

REMARKS

Boring advanced w/8" O.D., 4-1/4" I.D. hollow stem auger.

Water encountered @ 10.5'.

Bottom of boring @ 22.0'.

Water level not recorded.

Monitoring well installed 5/11/93.

Ground elevations ar relative to top of ris elevation of MW-8, which was assumed to be 400.00'.

BASIC SCIENCE AND TECHNOLOGY CORP.

LOG OF BORING

BORING NO. MW08
SHEET 1 OF 1

CLIENT	PROJECT	PROJECT NO.
USEPA	Roadway ESI	70720.142

PROJECT LOCATION	COORDINATES	ELEVATION (DATUM)	TOTAL DEPTH	DATE START
Chicago Heights, Illinois	unknown	397.0' (see remarks)	20.0 FEET	5/11/93

SURFACE CONDITIONS	LOGGED BY	DATE FINISH
Sloping east; grass-covered; west of drain. ditch	D. Ingram	5/11/93

CHECKED BY: J.P. Chitwood
APPROVED BY: B. Rundell

SAMPLING: SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	CORING: CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	ROD	DEPTH IN FEET	CLASSIFICATION OF MATERIAL	REMARKS
SPT	1	3	3	6/9	9	0.7								1	Silty CLAY; dark brown; stiff; high plasticity; moist; some roots; trace sand (topsoil)	Boring advanced w/8" O.D., 4-1/4" I.D. hollow stem auger.
														2	grading reddish-gray @ 1.5	
														3		
														4		
SPT	2	5	6	6/6	12	1.5								5	Clayey SAND; reddish-brown to gray; medium dense; poorly graded; fine grained; subrounded; moist; trace thin-bedded clay and 1/16" to 5/8" gravel	
														6		
														7		
														8		
														9		
SPT	3	5	6	8/10	14	1.4								10	Silty SAND; reddish-brown to gray; medium dense; poorly graded; fine grained; subrounded, moist; trace 1/8" to 3/8" gravel.	
														11		
														12		
														13		
														14		Water encountered at 13.5'.
SPT	4	4	5	?/?	5	2.0								15	SAND; gray; loose; well graded; fine to coarse grained; subrounded; wet	
														16		
														17		
														18		
														19		
														20		Bottom of boring @ 20.0'.
														21		Water level not recorded.
														22		Monitoring well installed on 5/11/93.
														23		Ground elevation based on elevation top of riser, which was assumed to be 400.00'.
														24		
														25		
														26		
														27		
														28		
														29		

WASTE SCIENCE AND TECHNOLOGY CORP.

PIEZOMETER / WELL INSTALLATION LOG

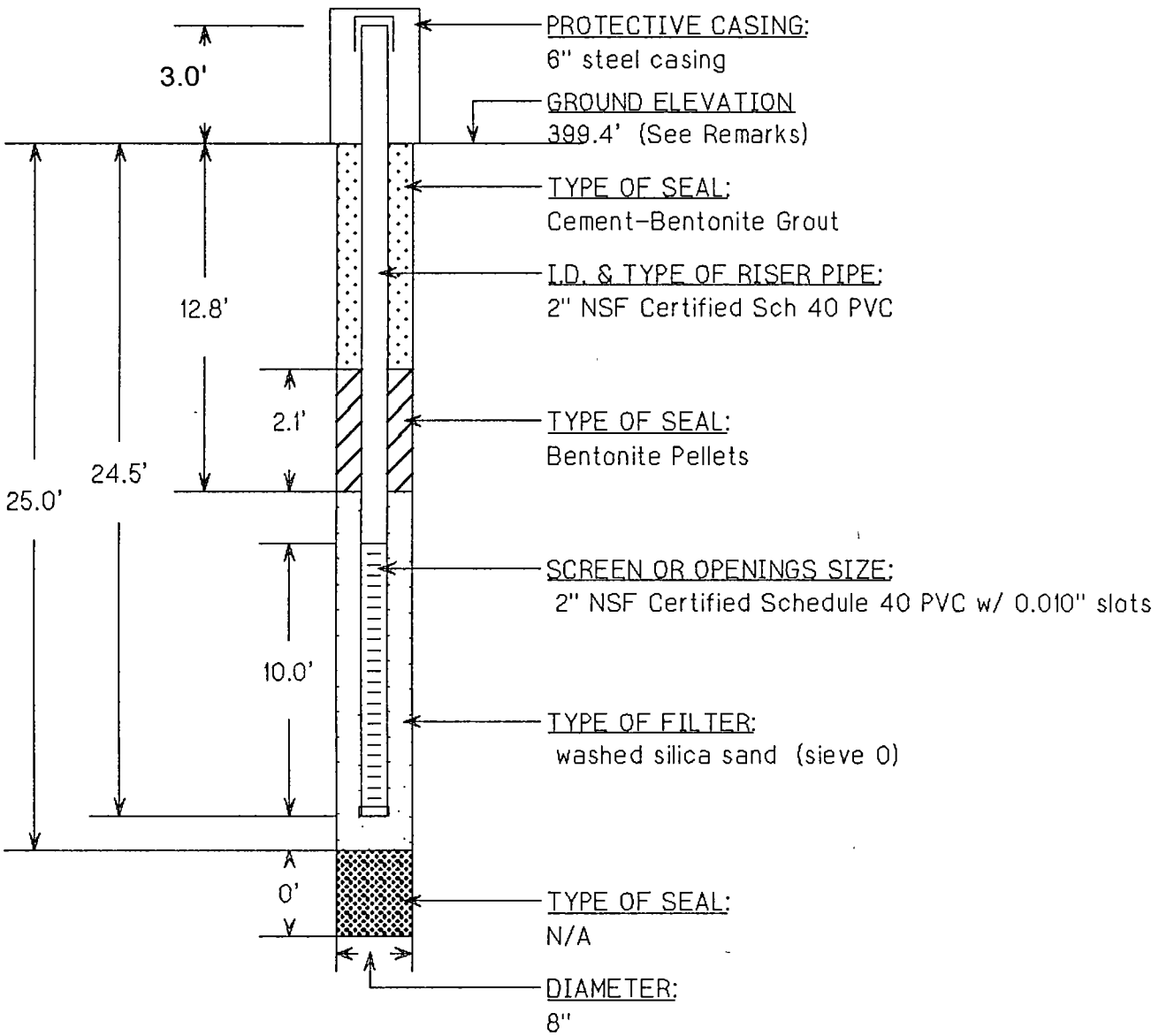
NO. MW08

CLIENT	PROJECT	PROJECT N
USEPA	Roadway ESI	70720.142

PROJECT LOCATION	COORDINATES	TOP OF RISER ELEVATION (DATUM)	DATE
Chicago Heights, Illinois	unknown	402.37' (See Remarks)	5/10/93

STRATUM MONITORED	LOGGED BY
Glacial drift aquifer	J. Quinn

CHECKED BY	APPROVED BY
J.P. Chitwood	B. Rundell



METHOD OF INSTALLATION:
Boring drilled to completion; set riser pipe and screen; placed filter and seal. Grouted to 8" below ground surface. Set above ground protective casing and 3 guard posts installed.

REMARKS:
Well developed by bailing 20 gallons of water on 5/17/93. Top of riser and ground elevations are relative to top of riser elevation of MW-8, which was assumed to be 400.00'.

WASTE SCIENCE AND TECHNOLOGY CORP.

PIEZOMETER / WELL INSTALLATION LOG

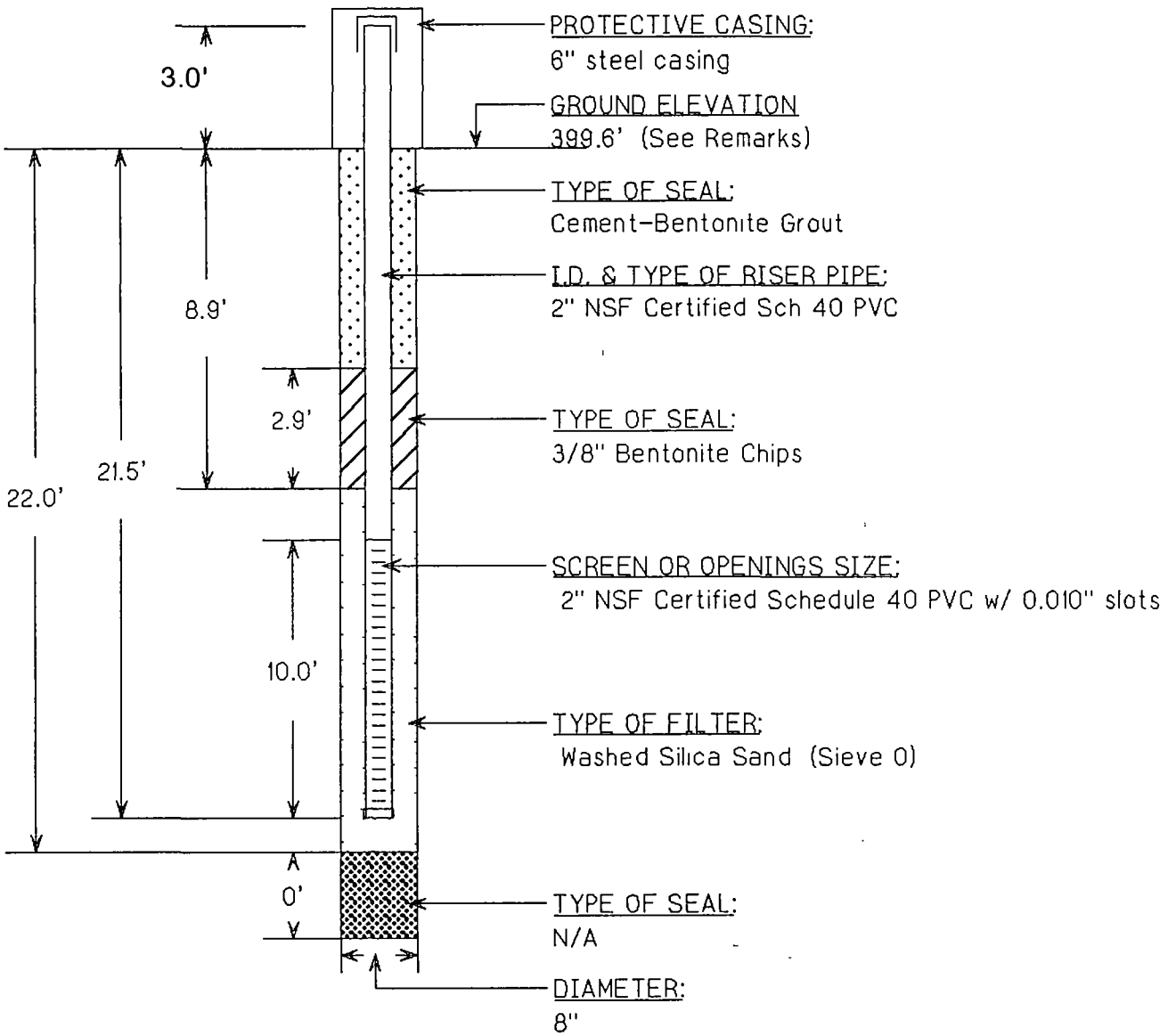
NO. MW07

CLIENT	PROJECT	PROJECT NO.
USEPA	Roadway ESI	70720.142

PROJECT LOCATION	COORDINATES	TOP OF RISER ELEVATION (DATUM)	DATE
Chicago Heights, Illinois	unknown	402.63' (See Remarks)	5/11/93

STRATUM MONITORED	LOGGED BY
Glacial drift aquifer	D. Ingram

CHECKED BY	APPROVED BY
J.P. Chitwood	B. Rundell



METHOD OF INSTALLATION:
Boring augered to 22.0 feet; set screen and riser pipe; placed filter and bentonite seal; grouted to 3.0 feet below ground surface; above ground protective casing and 3-point guard post system installed.

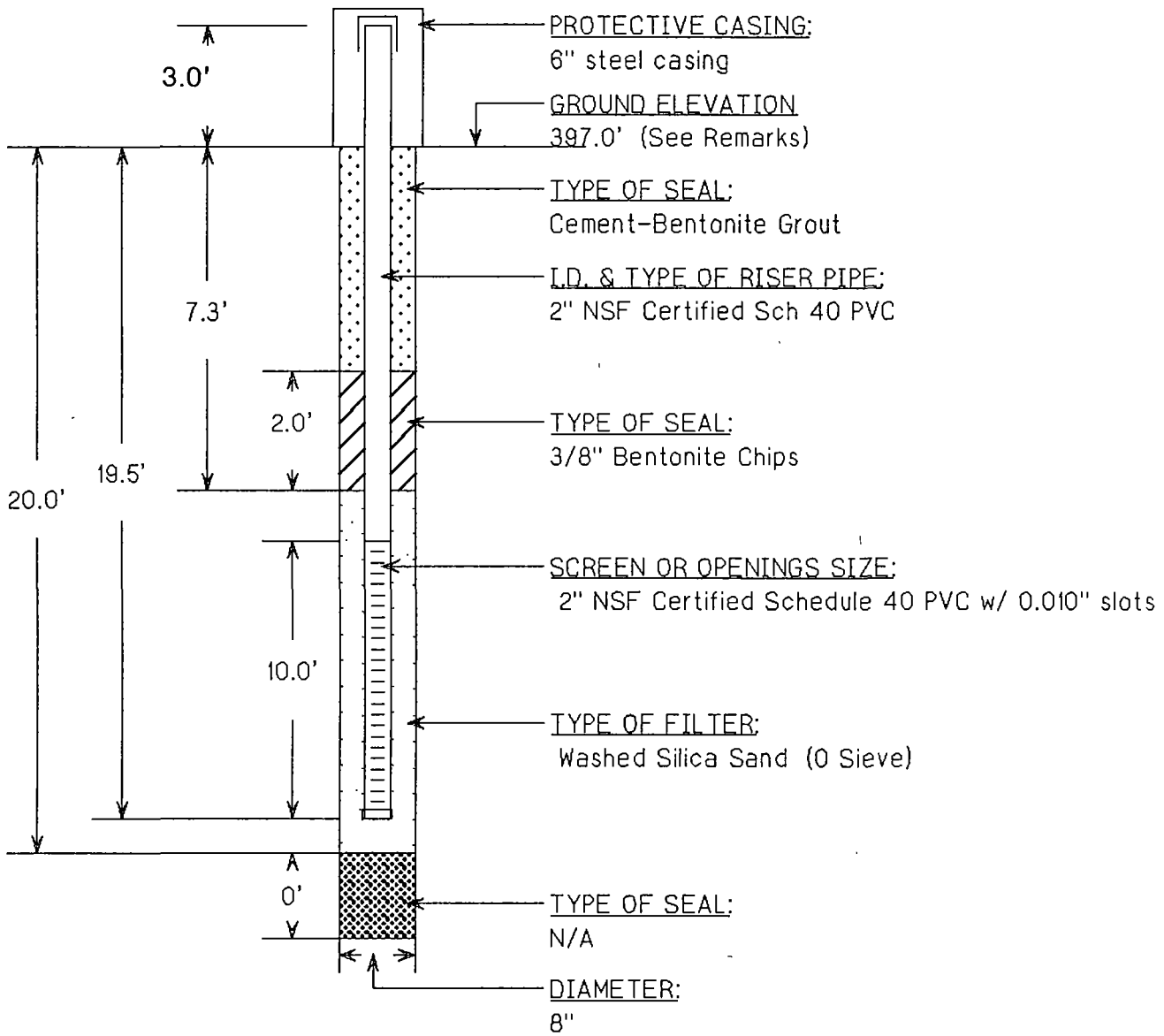
REMARKS:
Well developed by bailing 30 gallons of water on 5/18/93. Top of riser and ground elevations are relative top of riser elevation of MW-8, which was assumed to be 400.00'.

WASTE SCIENCE AND TECHNOLOGY CORP.

PIEZOMETER / WELL INSTALLATION LOG

NO. MW08

CLIENT USEPA		**PROJECT** Roadway ESI	**PROJECT NO.** 70720.142
PROJECT LOCATION Chicago Heights, Illinois	**COORDINATES** unknown	**TOP OF RISER ELEVATION (DATUM)** 400.00' (See Remarks)	**DATE** 5/11/93
STRATUM MONITORED Glacial drift aquifer		**LOGGED BY** D. Ingram	
CHECKED BY J.P. Chitwood		**APPROVED BY** B. Rundell	



METHOD OF INSTALLATION:
Boring augered to 20.0 feet; set screen and riser pipe; placed filter and seal. Grouted to 3' below ground surface. Above ground protective casing and 3-point guard post system installed.

REMARKS:
Well developed by bailing 50 gallons of water on 5/18/93. Top of riser elevation is assumed to be 400.00'.